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Journal OF THE AMERICAN DIETETIC ASSOCIATION

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Meat and Future Health Needs	*B. S. Schweigert*
New Plants for Human Use	*Karl S. Quisenberry*
Diabetes—Overweight: U. S. Problems	*James M. Hundley*
Failure in Group Treatment of Obesity	*Marvin B. Sussman*
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The Dietitian on the Mental Health Team	*Florence M. O'Brien*
Standardized Diets?	*A Symposium*

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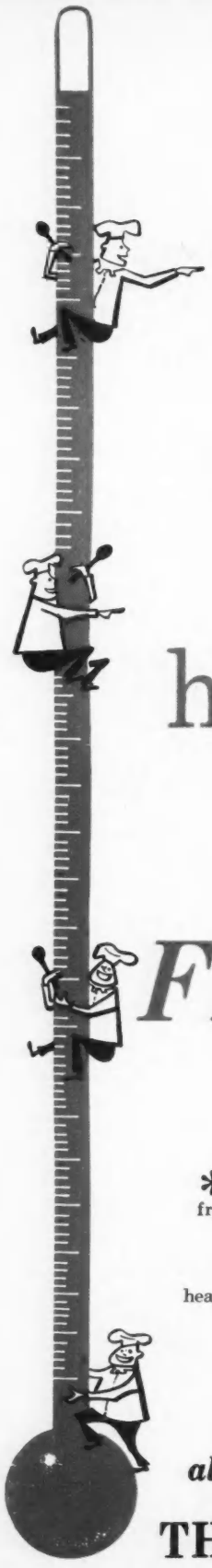

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Meat and Future Health Needs[1]

B. S. SCHWEIGERT, Ph.D.

Division of Biochemistry and Nutrition, American Meat Institute Foundation, and Department of Biochemistry, University of Chicago

BOTH the rapidly expanding population of the United States and predictions of future increases have focused attention on maintaining and improving the nutritional adequacy of our diet. Factors to consider include adapting production, processing, and distribution of our foods to meet this demand. An equally pertinent factor is an awareness of the influence of changing ways of living on the nutritional needs of various segments of our population. This aspect is clearly evident because of the longer life expectancy of our present population. It is pertinent, therefore, to review research and educational programs on the value of meat and other products of animal agriculture in meeting the nutritional needs of man.

Challenging Population Changes

Many predictions have been advanced as to the expected population growth in the next twenty to fifty years. It is perhaps of greatest value to examine trends of recent years as well as future predictions to evaluate nutritional needs of our population. The proportion and numbers of individuals in the upper age group (sixty-five years of age and older) increased from 8 million in 1935 to 12 million in 1950 and is expected to reach 15 million by 1960 and 20 million by 1975. As compared to an increase of 45 per cent in the total population expected in 1975, the upper age group will have increased by 150 per cent. We should keep in mind that this group now accounts for approximately 10 per cent of the total population. Furthermore, while the life expectancy of our total population has steadily increased (attributable largely to reductions in mortality of babies from infectious diseases and so on) that of older members of our population has increased only slightly. These factors are important to us in ascertaining not only the total quantity of nutritious foods needed but also the kinds of food needed.

[1] Journal Paper No. 126, American Meat Institute Foundation. Presented at the 38th Annual Meeting of The American Dietetic Association, on October 18, 1955.

The over-all problem therefore is to provide greater quality and quantity of nutritious foods and to expand educational activities to apply nutritional information to *all* segments of our population. Perhaps the simple recommendation for older members of our society to continue to consume the same foods that provided a balanced diet as a youngster but at levels to provide a total caloric intake consistent with the maintenance of proper body weight without a reduction in protein, minerals, and vitamins is the most desirable. Base lines of nutritional needs and protective foods providing these nutrients have been charted.

We now are seeing a significant trend in nutrition away from studies on the nature and amounts of nutrients required for rapid gain and on the nutritive content of foods to various physiologic aspects of nutrition. Recognition of the fact that four of the five major causes of death are metabolic or degenerative has perhaps prompted this trend. Questions such as the following are receiving attention: What nutritional needs are associated with optimal functioning of various organs and tissues and thus delay or prevent degenerative changes? What values can be associated with a balanced diet, with controlled caloric content and composition for each stage of the life cycle? How is a feeling of well-being associated with dietary patterns? Results from such studies often suggest that balanced intakes of high quality protein, minerals, and vitamins above those considered to be "adequate" improve performance, but as yet it is difficult to quantitate either the nature or extent of the improvement or levels of specific nutrients associated with such improvements.

Improvements in Meat Production and Processing

Much has been accomplished in developing improved breeds of beef cattle, swine, sheep, and poultry for the specific purpose of food production. Extensive cross breeding in the swine and poultry industries is also practiced. Attention, however, has been focused in recent years on the quality of the carcass produced. Thus, a more critical appraisal of the composition of the more rapid gains obtained in shorter and shorter fattening periods is being made. This is best illustrated by the extensive attention being given to the "meat type" hog which has

stressed carcass evaluation tests as a guide to performance, not just rates of gain or the economy of gain for a meat-producing animal. Some studies already conducted reveal inheritable carcass characteristics. Consideration of desirable characteristics, i.e. size of rib-eye muscle, tenderness of muscles, and so on, in a breeding program to supplement those now in use, such as disease resistance, body conformation, rate of gain, and economy of gain, is potentially of great value.

The development of improved rations for meat-producing animals and disease control also have had great impact on the efficiency of production. In fact, it has often been stated that man provides sounder nutritional practices in the care of his livestock and pets than he practices for himself or his family. On the other hand, many concepts of nutrition for man have been adopted from knowledge obtained from animal nutrition.

Research in the development of improved rations for animals has centered around defining the qualitative and quantitative requirements for each species, formulation of balanced rations based on this information and available feed supplies, and the use of new feed ingredients (trace minerals, antibiotics, antioxidants, and hormones). The trace mineral, zinc, for example, has been shown to be of marked value when added to presumably adequate diets for swine. The increased rates of gain and efficiency of gain when antibiotics are added to the ration appear to be due primarily to control of the disease level in the animal. Antioxidant additions are of value in animal feeds and in foods for man in increasing the shelf-life of the products through a delay in the development of rancidity of the fat and an increase in the vitamin A and carotene stability in mixed feeds.

The explanation for the increased rates of gain and efficiency of gain of beef steers fed a hormone supplement (for example, diethyl stilbesterol) is not clear. The evidence now available suggests that the additions of proper levels of antibiotics or of stilbesterol do not appreciably affect the carcass quality of the animal and do not result in the accumulation of these substances in the carcass. Careful attention to these factors and extensive research on any alteration in feeding practices are vital to the livestock producer, processor, and the consumer.

One aspect of breeding and nutritional programs in livestock production merits further comment. With a rapid increase in population and the resultant food needs, the production of highly nutritious foods of animal origin efficiently and in sufficient quantity on a long-range basis is a real challenge. With this in mind, it would appear that the ruminant (cattle and sheep) that can utilize large amounts of roughage, which does not compete directly with the foods of man, offers the greatest promise of continuing to supply the major foods from animal agriculture. Extensive studies are being conducted to expand the efficient use of roughage (corn cobs, corn stalks, straw, and so on) for cattle and sheep with the use of minimal quantities of concentrate feeds.

The major limitation to high acceptance of the meat from cattle which are fed these rations and do not have a high degree of finish (fatness) is that the meat is not sufficiently tender. Tenderness is considered the major factor in the eating quality of beef. Therefore, if it were possible to achieve tenderness of meat without the expensive and wasteful procedure of finishing the animal for market by heavy concentrate feeding, a major advance in providing greater quantities of high-demand meat at lower cost would be achieved.

Nutritive Content of Meat

In fact, the nutritive content (protein, minerals, and vitamin) of meat from Utility grade animals is greater per serving than that from Choice grade animals. This can readily be seen from the data in Table 1 obtained in our laboratory for the percentage of protein in various cuts from carcasses of these two grades. The lower protein percentage in the Choice grade (Prime grade under the present grading system) is attributable in part to the higher fat content of these cuts. It may be concluded, therefore, that on the basis of economy of production of beef and nutritive quality, it is a sound objective to achieve the production of less highly finished beef that possesses sufficient tenderness. At such times as the supply of concentrates for animal feeding are in short supply, more meat could be produced with a given supply of concentrates. To maintain the existing level of consumption of carcass beef (79 lb. per capita in 1954) an increase of 158 million lb. per year of beef would be needed, assuming an annual increase in population of 2 million.

Another important aspect of this objective is that such meat cuts would contain less fat and thus would provide fewer calories per unit of protein. This is, of course, particularly important in providing more protein, minerals, and vitamins at a given caloric level. On the basis of existing information, therefore, providing nutritious foods, such as meat, and controlling the caloric composition by including only

TABLE 1

Protein content of uncooked choice and utility grade beef cuts

BEEF CUTS	PROTEIN	
	Choice grade	Utility grade
	%	%
Chuck	14.26	14.63
Flank	13.01	14.12
Neck	13.54	19.65
Rib	14.13	16.08
Rump	15.53	15.65
Plate	11.67	13.95

modest amounts of fat is a sound basis for an effective weight control program. Since maintaining weight control is important in reducing the incidence and extent of degenerative disease, the importance of trends toward producing highly nutritious food more efficiently and with controlled caloric composition is evident. A study of factors influencing the tenderness of beef is an important part of the research program of the American Meat Institute Foundation.

Marketing and Merchandising

The meat industry has recognized the desirability of merchandizing meat items with only modest amounts of fat and bone included. Thus, we see more and more closely trimmed hams, pre-packaged fresh and cooked meats, and so on. This development is sound, since such trimmable fat and bone can be more effectively utilized by the processing plant for other uses and distribution charges are thus minimized for the food items. We can expect to see increased amounts of meats merchandized in this manner as well as in unit packages (pre-packaged and canned items and new meat foods) which supply consistent size servings for various family sizes. Specialty uses, in addition to new meat foods, i.e., controlled caloric content per can and dietetic foods, undoubtedly will be expanded.

New processing procedures are constantly being evaluated by the meat industry and other food industries. Interest and research activities on the potential value of cold sterilization, for example, sterilization of foods by ionizing irradiation—a peacetime application of atomic energy, continues unabated.

It is clear, therefore, that progress in livestock production, processing, and merchandizing is providing foods of high nutritive value with greater control of caloric composition consistent with sound nutritional practices for the mode of living of our present population. These advances in efficiency in the production of foods of animal origin have accounted in part, at least, for the greater amounts of food that can be purchased now as compared to thirty years ago per unit of a wage earner's take home pay. Specifically, U. S. Department of Agriculture figures show, for example, that a unit of work time at present will purchase 2 lb. steak as compared to 1½ lb. thirty years ago.

Another important aspect, often overlooked, in providing meat and other foods at a modest cost and maximum return to the livestock producer, is effective utilization of by-products, such as glands, hides, hair, fats, and animal by-product feeds. Research programs that contribute to improve procedures for handling these materials or new uses have an important bearing on the costs of producing and processing meat.

TABLE 2

Growth rates and hemoglobin levels of rats fed diets with and without liver

SEX	SUPPLEMENT TO BASAL DIET			
	None	Vitamin B_{12}	Vitamin B_{12} + 4% liver	Vitamin B_{12} + 10% liver
	Body Weight at Six Weeks			
	gm.	*gm.*	*gm.*	*gm.*
Male	154	257	261	260
Female	125	181	179	182
	Hemoglobin			
	%	%	%	%
Male	14.8	15.3	15.6	15.8
Female	15.2	15.2	16.4	16.2

Research for Improved Health

Looking ahead, studies on the role of nutrition in terms of "sub-clinical" disease states (degenerative diseases, organ and tissue functions, ability to withstand stress, and so on) will undoubtedly receive more attention. A number of studies on the value of meat and other foods of animal origin relating to these frontiers in nutrition research are pertinent to the present discussion. Research with microorganisms and with experimental animals has shown that meat contains vitamin-like factors, not identified with known nutrients. Experiments have demonstrated examples of improved organ or tissue function when liver, for example, was added to defined diets presumably adequate in all known nutrients. Results obtained from experiments in our laboratory are shown in Table 2. In these tests, the addition of 4 or 10 per cent liver did not increase the rates of gain of the rats over that observed with vitamin B_{12}; however, a statistically significant increase in hemoglobin levels was obtained when either 4 or 10 per cent liver was added to the diets for the female rats or 10 per cent liver for the male rats.

Studies in other laboratories have shown that liver and cuts of pork muscle contain unknown factors that counteract the stress of feeding high levels of thyroid stimulants, i.e., iodinated casein, to rats. Of course, the significance of these studies in human nutrition cannot yet be ascertained.

These experiments indicate, therefore, that, through expanded research programs, much vital information can be expected in more clearly defining other advantages of providing liberal quantities of the products of animal agriculture. We can expect continued development of new foods and new distribution methods by the live stock and meat industry as health needs suggest modifications in present patterns.

New and Improved Plants for Human Use[1]

KARL S. QUISENBERRY, Ph.D.[2]

Assistant Director of Crops Research, Agricultural Research Service, U. S. Department of Agriculture, Washington, D. C.

IN THE last fifteen or twenty years, we have made some fundamental changes in our eating habits. For example, we're shifting from high-calorie foods and are eating more of the protective foods. People have learned to eat more meat, milk, eggs, and vegetables. But, to make these better diets possible, agricultural research first had to help farmers find ways of producing more of these protective foods. New crop plants have been introduced, better varieties developed, and cultural and harvesting methods so improved that many commodities—among them almonds, avocados, broccoli, dates, figs, lemons, pecans, and spinach—are no longer rarities or beyond the means of the average man but have come to form a definite part of the daily diet. Similarly, the great staple crops, such as corn, wheat, oats, and potatoes, have been so improved and made adaptable to production over great areas of variable soils and climate that they are more readily available and better adapted than ever for human food and livestock feed.

By and large, the principal objective of most of our plant investigations through the years has been to obtain as *large* a crop yield as possible. Recent developments in the science of nutrition, however, have pointed up the importance of devoting more attention to producing crops of the highest *nutritional* quality. And, since we have no food shortage at this time—at least in this country—we can and should give more attention to quality in our work of developing and growing improved food crops.

My topic, new and improved plants for human use, is broad and complex. It has challenged man since the beginning of civilization. We do not know when plants were first domesticated or at what stage they became dependent on man's care. We do know that in his long association with most of the cultivated species, man has altered them profoundly. A few plant species have proved so valuable and so adaptable in new environments that they have been carried around the globe and today are considered the world's most important food plants.

These include rice, wheat, corn (or maize), potatoes, sweet potatoes, common beans, soybeans, the sugar plants—cane and beets—cassava, bananas, and coconuts. The first eight are among the major crops produced in the United States. The other three—cassava (our source of tapioca), bananas, and coconuts—grow only in tropical countries, but we import them or their products in great quantities for consumption in this country.

Introduction of Food Plants

We grow many other food crops in the United States, of course, but most of them—like the eight mentioned—were first developed outside our borders. Corn, most beans, tomatoes, potatoes, and peanuts came from South America; cabbage, apples, pears, plums, turnips, and beets, from Europe; dates, sorghum, and watermelons from Africa; rice, peaches, oranges, and soybeans, from Asia; and cucumbers from India.

Many people have had a share in these introductions—ship captains, missionaries, consuls, explorers, early settlers with their precious packets of seed. More recently plant introductions have been the result of organized planning by government and private industry. We enjoy cordial and productive relationships with many other countries in the exchange of plant materials for use in breeding better food and feed crops adapted to the various areas of the world.

A few of the introductions have represented new food crops. The soybean is a classic example. Because of introduction and breeding of improved varieties, adapted to the soils, climate, and day-length cycles of the central part of the United States, soybean plantings have increased from a small acreage in the Southeast to more than 18 million acres extending throughout the areas where

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 19, 1955.

[2] The author wishes to acknowledge the assistance of Stella English, Division of Information, Agricultural Research Service, Department of Agriculture, in assembling the material contained in this paper.

soybeans can be grown. We now account for well over a third of the world production.

Other recently introduced foreign crops that look promising for food production include sesame, blight-resistant Chinese chestnuts, black pepper, and acerola, the West Indian cherry which has particularly interesting possibilities. This fruit has higher ascorbic acid content than any other. Whereas oranges average 50 mg. ascorbic acid per 100 gm., the acerola has been assayed at 2963 mg. per 100 gm. when green and 1707 mg. when ripe—almost fantastic figures. Two or three of these "cherries" can furnish the entire daily requirement for ascorbic acid. Growers and processors are interested in producing acerola juice for adding to other juices, such as citrus, to increase ascorbic acid. The high ascorbic acid content of acerola was discovered by the Experiment Station at the University of Puerto Rico at Rio Piedras, and selection and quality studies are continuing there. The Department of Agriculture has also been growing planting stock at the Coconut Grove Introduction Garden in Florida and distributing it to growers in that state and in Hawaii. We may be hearing more about this new fruit crop before long.[3]

Although we are continually looking for new food plants that will be adaptable to our country, we are getting by far the greatest benefits from plant materials introduced as germ plasm in improving our present commercial crops. Hardly a crop in this country could be mentioned that has not been improved in one or more ways through introduced breeding materials. Two recent examples are the new Charleston Gray watermelon, produced commercially in 1955 for the first time, and the Sunapee peach, a development of the New Hampshire Experiment Station.

In the case of the Charleston Gray watermelon, the new variety has resistance to the diseases of anthracnose and fusarium wilt achieved through the introduction of germ plasm originating in Africa. The quality of this new variety compares favorably with others on the market. The advantageous characteristic of the new Sunapee peach is its extreme cold resistance obtained by introducing germ plasm obtained from clonal material imported from the Caucasus Mountains.

Hazards of Production

We are making particularly good use of plant introductions to help us in developing crop varieties that will withstand the hazards of weather, diseases, and insects. These hazards, together with weeds, are a major problem in the economic production of food. A comprehensive report made by the Department of Agriculture a year or so ago estimated the annual production losses in farm crops from these and similar causes to be $8.3 billion—or one-fifth of our annual farm production potential. The vagaries of weather or the build-up of serious insects and diseases have an important influence on the stability of food production.

Several years ago, for example, fusarium wilt and nailhead rust threatened to wipe out commercial tomato production in Florida. The disease-resistant Marglobe tomato developed through research saved the industry.

More recent has been the destructive attack on our durum wheat crops by stem rust 15-B. Durum wheat growers lost 65 per cent of their crop to this disease in 1953 and about 75 per cent in 1954. The situation was somewhat better in 1955, because unusually warm weather brought the wheat to maturity before the rust could gain too much headway.

The point I wish to stress is that we have not yet been able to predict and prevent these hazards to our food production. They are complex and difficult, and we need a research program that is adequate to anticipate the needs and to have the answers ready.

Improving Quality Through Breeding

We in this country have an abundance of food, but quantity *per se* is not enough. We must also strive to improve the quality of our food supplies. Efforts must begin in the plant breeder's test plots and continue straight through to the consumer's dining table.

I do not mean to imply that we have not considered quality in our research on food production. We have. This has been particularly true in recent years as new methods of processing and marketing have narrowed the range of acceptable quality. Few people realize how much trouble plant breeders take to see that new crop varieties have good taste and appearance and high food value.

We used to think that snap beans must contain considerable fiber to stand up in today's rigorous marketing. Plant breeders have proved this theory wrong. We now have tender, low-fiber beans that do not shrivel or wilt more rapidly than varieties of lower quality. Furthermore, they maintain these good qualities through transportation and marketing. The Wade variety of snapbean, developed at the Southeastern Vegetable Laboratory, is noteworthy for holding up and is becoming quite popular in the Southeast and in other areas where it is adapted.

Our sweet corn breeders are working hard to develop a high quality sweet corn for the South that will be resistant to earworm. Although they haven't released any varieties yet, they do have evidence that high quality and earworm resistance are inherited and can be combined. We would also like to breed a sweet corn that will remain reasonably

[3] Since this paper was presented, at least one commercial company has introduced apple juice fortified with acerola and is advertising it for use in pediatric feeding.

sweet longer. We know that we can do nothing to stop the sugar from turning to starch, but we believe varieties can be developed that will change more slowly than our present ones.

The Sunnyside sweet potato, released a few years ago for the Chesapeake Bay area, contains about 50 per cent more carotene than the popular variety Porto Rico. Our breeders are now trying to get high carotene content into other varieties that are adapted to other areas.

We are also breeding potatoes with higher ascorbic acid content and with higher total solids. Many of the old varieties have a good deal of ascorbic acid when they are harvested, but they lose most of it during storage. We now have several selections in our breeding plots that contain more of the vitamin and hold it in storage. For example, in storage tests of twenty-one varieties, one new variety averaged 30 mg. ascorbic acid per 100 gm. fresh weight at the end of four months, as compared with 15.6 mg. for American Giant, 11.8 mg. for Green Mountain, and 9.3 for Irish Cobbler—more than twice as much as these varieties now in common use. Since potatoes are such an important part of the diet of many people, increasing their ascorbic acid content would constitute a significant contribution to our needed supply of this vitamin. We have selections that contain a higher percentage of total solids, too—which, of course, means more food for the same size potato. The new specific-gravity test for predicting the total solids content of potatoes is proving especially valuable in developing new varieties; if experimental strains show a low solids content, they are eliminated.

Rice is another crop on which experimental work is proceeding. A special research laboratory has been set up at the Rice Experiment Station in Beaumont, Texas, to serve as the national headquarters for rice quality work. In addition, our Human Nutrition Research Branch at Beltsville, Maryland, and our Southern and Western Utilization Research Branches are conducting basic studies of the physical and chemical structure of the rice grain and their possible relationship to cooking quality. From this work, we hope to establish methods and procedures for evaluating breeding material early in the program so as to quickly weed out those strains that do not have the desired quality characteristics.

Although corn is grown primarily for livestock feed, I would like to mention our fundamental studies on corn protein under way at Ames, Iowa. The quality of protein has little effect in the feeding rations of ruminants, because the microflora of the rumen can alter proteins to fit the needs for amino acids of this class of livestock. This mechanism is not present, however, in animals with simple stomachs, such as pigs, chickens, and human beings. Since 70 per cent of the corn fed to livestock is fed to non-ruminants, the quality of the protein is extremely important.

Studies have shown that the germ protein of corn is of a very high quality, comparable to milk, meat, and egg protein, but the endosperm protein is of lower quality, composed mainly of zein in which tryptophan and lysine are totally lacking. These two amino acids are essential for growth in non-ruminant animals. The emphasis of the Iowa program, therefore, is to improve the quality of corn protein rather than to increase total protein. We've only just started, but I believe we're on the right track.

Improving Quality through Cultural Methods

There is no question that we can breed plants for higher nutritional quality. We know, too, that the way we grow them also has an important influence on their quality. Chemicals applied as nutrients to the soil, or as growth regulators, or for pest control can have good or bad effects quality-wise.

For example, apples produced in the Okanogan Valley of Washington and other areas deficient in boron develop internal and exterior cork on the fruit unless the fertilizer applied contains boron. In the McIntosh apple orchards in the Champlain Valley of New York the quality of the fruit may be impaired unless boron, potash, and magnesium are applied. Reports indicate that sandy New Jersey soils low in fertility produce poor quality canning tomatoes and that the quality of the tomatoes can be greatly improved by fertilizers, especially those high in potash. On the other hand, excessive nitrogen may cause internal breakdown and discoloration of cabbage, but apparently has little effect on the firmness of the head. Excessive nitrogen may cause discoloration of Irish potatoes and increased cracking of sweet potatoes.

Just recently, a study of the nutritional value of turnip greens grown at various locations has revealed that plants grown on certain soils apparently synthesize vitamin B_{12}—a vitamin formerly found only in animal products. This discovery was made in a comparison of the growth of rats fed on greens grown near Blairsville, Georgia, with the same variety of greens grown at Experiment, Georgia. We don't know where this finding will lead. It may be the key that opens the door to new techniques for treating our soils. These, in turn, may provide plants with higher nutritive value. We need more research to determine soil-plant relationships and their influence on the yield and quality of all food crops.

Although in recent years a large number of pesticides have been studied for their direct effect on odor and flavor of fruit or vegetables treated, few studies have been made of their effects on other crop qualities. One report states that bordeaux and

copper compound dusts will increase the soluble solids in cantaloupes. Glyodin has been reported as increasing the sugars in apples and decreasing the acidity.

Not much is known, either, about the effect of growth regulators on the quality and nutritive value of fruit and vegetables. Tests of two chemicals resulted in delaying maturity of snapbeans, with loss of color and flavor. On the other hand, a chemical applied to the pods of beans in the greenhouse caused the beans to hold more of their ascorbic acid after harvesting. Other chemicals are reported as reducing the soluble solids and adversely affecting the flavor of peaches and apples and lowering the market value of tomatoes.

Thus, it can be seen that the effect of agricultural chemicals on the nutritive value and acceptance of foods is an extremely complex subject. The field is new, and most results so far are entirely preliminary. The situation is complicated by such variable factors as location, soil, climate, season, variety, water supply, the large number of different chemicals, and the interaction of the chemicals themselves. Nevertheless, it is an extremely important problem, and much more research is needed before we can realize the potential values of these food-production tools.

Maintaining Quality of Food Plants

If we are to take advantage of the improvements in quality of food produced, we must make every effort to see that the quality is not lost through inefficient harvesting, transportation, storage, or processing.

Mechanical harvesting is a tremendous quality preserver by cutting the time in getting produce from the field to the consumer. Precooling and prepackaging are helping to preserve quality and reduce moisture loss and wilting. Improved methods of transportation and better temperature control during transit are also contributing to better eating.

In spite of our effort so far—and we're really only just getting started—to develop improved methods of transportation, storage, and merchandising of fresh fruits and vegetables, we're still losing a large part of our crops through spoilage and damage. The losses in marketing amount to as much as 30 per cent in some cases. We're learning where the damage occurs, however, and where the losses show up. Often damage during harvesting or at the terminal market does not show up until the produce is on the retail counter. We're also learning the temperature and humidity requirements to reduce diseases that often attack fruits and vegetables after they've left the field. New, efficient packaging materials, proper refrigeration, and proper care and display of fresh fruits and vegetables are giving consumers added incentive to buy these attractive and nutritious foods.

Improvements in methods of food preservation are also contributing increasingly to high-quality foods and better nutrition. I'm referring, of course, to the new techniques in freezing, dehydrofreezing, concentrating, and drying. These processes are not only making fresh-quality foods available the year around—regardless of geographic location—they are also helping to stabilize the market and to reduce seasonal peaks and fluctuating prices—thus increasing total consumption. Much research—both public and private—is being done on the best ways of preparation, processing, and storage of foods preserved by these methods, in order to retain appearance, taste appeal, and nutritive qualities.

Meeting Consumer Needs and Preferences

Another factor is extremely important if we are to benefit fully from the improvements brought about by science in the development of better foods from crop plants—that is, the food needs and desires of the public generally. It doesn't make any difference how fine a fruit or vegetable may be from the scientist's viewpoint or how well it stands up during transportation and marketing, if consumers don't like it, don't want it, or can't afford it, they won't buy it. We need much more information about the habits and the preferences of consumers as well as how to teach people to overcome dislikes affecting food acceptance.

Consumers can tell us what they like—whether it's potatoes with shallow eyes, strawberries with a tart flavor, or rice with long thin grains. But only nutritionists—you people concerned with the human nutritional requirements—can tell us what nutrients are needed in the foods we develop through production research. Suppose, for example, we know that we need to improve the vitamin content of a fruit or vegetable—ascorbic acid in potatoes, say. We still need to know how much, what good it would do in the human diet, and whether it will be retained in normal cooking. Answers to questions such as these will be tremendously helpful to us in plant breeding work. If we know what is needed, we have a goal to shoot at, and we can then work toward achieving it.

Plant improvement is not a fast process. Ten to fifteen generations are required to develop and test a new variety. New techniques of breeding, including back-crossing, the use of male sterile plants, hybrid vigor, and induced mutations through irradiation, are helping us speed up the process and do a better job. Greenhouses—and, more recently, seed-increase plots in southern areas—are helping us increase the number of generations we can grow in a year. Expanded quality work is helping us to evaluate prospective varieties early in the program. It will not only save valuable time but will help us to do a better job of developing new varieties that meet the needs of consumers. We are hopeful that funda-

mental studies now under way will give us quicker methods of evaluating quality with small amounts of materials. New methods of testing quality of wheat, for example, permit us to evaluate strains with as little as 25 to 50 gm. of grain. We formerly required a minimum of 4 lb. We need techniques like this for evaluating the quality of many other crops.

Conclusion

I have limited my remarks primarily to crop plants that are consumed directly as human food. The progress that has been made in improving plants for livestock feed is a story of equal importance. We have been called a meat-eating and milk-drinking nation. These highly nutritious foods have become available as we have learned the nutritional requirements of domestic animals and have developed plants to satisfy those needs.

As our population continues to grow and our farm land and workers shrink in proportion to our total population, we will need to work harder than ever to make each acre produce its maximum of high quality foods—whether they come to us directly or through livestock products. The job will require more research and education all along the way. And—perhaps most important of all—it will require the cooperation of everyone concerned. That means everybody involved in the production and distribution of foods—including dietitians and nutritionists who have the important job of determining how these foods can best be used for the health and well-being of our people.

Left-Overs

Care of left-overs was the topic discussed by Jeanette L. Hampton, Area Home Economist of the U. S. Department of Agriculture, Chicago, when she spoke before the Klenzade Eighteenth Educational Seminar in French Lick, Indiana, last spring.

She pointed out that even general recommendations on the storage life of cooked left-over foods are impossible in view of the innumerable methods of preparation, the composition and nature of foods. Thus, it is only possible to review some basic points with reference to storage, proper cooking, and care of left-overs, which she itemized as follows:

(a) Left-overs should be refrigerated promptly and used as soon as possible (within a day or two).

(b) Change the left-over from its original form for the sake of variety.

(c) Once a food has been served as a left-over, it is generally inadvisable to hold it over for further use.

(d) A left-over that has been cooked one time should, therefore, receive only brief heat treatment the second time.

(e) Take into consideration the original seasoning to avoid so-called "flavor clashes."

In the realm of cooked meat, those which have been roasted or fried—because of the drying process—have a slightly longer storage life than meats in stews, sauces, and gravies. Likewise, fish and meats cut into larger pieces for cooking will keep longer as left-overs than the same food cut into smaller pieces.

With respect to refrigeration, a number of important points should be stressed. Perhaps the primary and most important is that of making every inch of the refrigerator count without over-crowding. Overloading a refrigerator to such an extent that cold air cannot circulate properly causes temperature problems and possible spoilage. Also, only perishable foods should be refrigerated—not such items as pickles, jams, jellies, sweet spreads, and so on.

Often large quantities of cooked food must be held for several hours (or overnight) prior to serving. Assuming that this food is hot, it would be better to divide the batch into several smaller lots for slight cooling prior to refrigeration. Shallow containers with cold water pans or cracked ice would, of course, speed this process. On the other hand, it may be necessary at times to refrigerate a very large container of hot food. In such cases, the entire batch should be stirred at frequent intervals to insure even cooling. Otherwise, the center mass may remain just warm enough to produce spoilage bacteria, even though the product is under refrigeration. This is particularly important in the case of mixed dishes containing meat or eggs and in creamed dishes. Refrigerating large containers of hot food is recommended only when adequate refrigeration is available to cool the food without raising the temperature of the refrigerator above 45°F.

Diabetes—Overweight: U. S. Problems[1]

JAMES M. HUNDLEY, M.D.

Chief, Laboratory of Biochemistry and Nutrition, National Institutes of Health, Bethesda, Maryland

MUCH has been written about the tremendous improvement in health which has occurred in this country over the past half-century. Maternal and infant death rates continue to decline. Tuberculosis mortality is constantly lower. The infectious diseases have been largely eliminated as common causes of death. Recognizable cases of primary vitamin deficiencies have become a rarity. The most concrete evidence of improving health is the continued increase in life expectancy. Figure 1 depicts the trends between 1900 and 1952 for white men and women in the United States. A white man at birth could expect to live 66.6 years if born in 1952; if born in 1900, he could expect to live only 48.2 years, a difference of 18.4 years. The corresponding situation in white women is even more striking, with an increase of 21.6 years in life expectancy between 1900 and 1952 (1).

As is commonly known, there are many reasons for these health improvements: better preventive medicine, better medical care, new wonder drugs, better sanitation, and last but not least, better nutrition. However, this apparent picture of glowing health is marred when one begins to look at current problems and to think about still further health progress. While there still remain many important health problems in younger people, the most important and largely unsolved problems are now found in our constantly expanding older age groups. The essence of this situation can be derived from Figure 1 in comparing the upper two lines with the lower two. It is clear that tremendous progress has been made in conquering diseases which cause death in younger persons, but relatively little against those which afflict older people.

Diabetes

The discussion in this paper will concern just one current health problem where the United States is far from being the healthiest nation in the world, as is so frequently and uncritically stated. On the contrary, it is the unhealthiest nation in the world with respect to this specific disease. Table 1 presents the reasons for this statement. Mortality from diabetes in this country is higher than in any other nation represented in the table and, in fact, than in any other country which keeps vital statistics. For example, diabetes mortality in this country is nearly four times as great as in England, France, or Finland. Only Canada, Australia, and New Zealand can begin to compete for the dubious distinction of having a diabetes problem similar to ours. There are many differences among various countries in methods of reporting vital statistics and other factors which might explain some of these differences, but none are of sufficient magnitude to invalidate these comparisons.

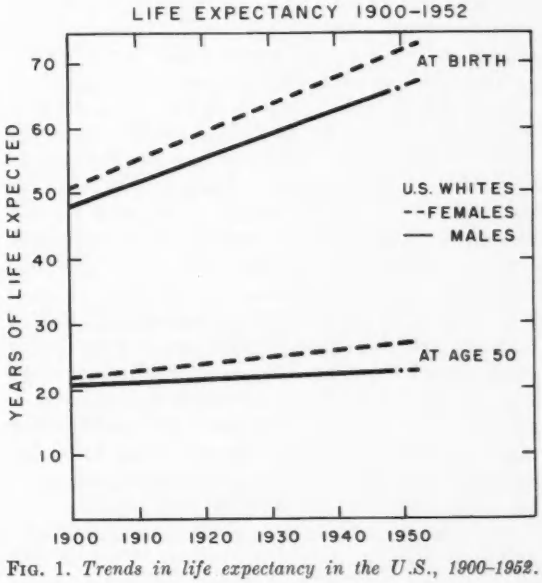

FIG. 1. *Trends in life expectancy in the U.S., 1900–1952.*

STATISTICS

Diabetes is certainly a major roadblock in the path to still better health. By conservative estimate there are more than 2 million persons with diabetes in this country (3). It is the ninth leading cause of

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 18, 1955.

TABLE 1

Death rates from diabetes in various countries, 1928–1948 (2)

COUNTRY	DEATH RATE FROM DIABETES*		
	1948	1938	1928
United States	26.4	23.9	23.6
Canada	20.3	13.8	11.1
Finland	5.9	8.1	—
Sweden	6.8	10.8	12.6
France	7.3	10.1†	—
Switzerland	11.2	16.2	10.3
England-Wales	7.6	11.5	13.1
Australia	18.8	17.7	12.0
New Zealand	20.1	18.8	12.2

* Rates per 100,000 population.

† 1934 data.

death, with 25,000 people each year dying as a direct result of the disease. Many more die from other diseases with diabetes as an aggravating or predisposing factor. For example, diabetic persons are notoriously prone to develop arteriosclerosis in various forms (4) and are even much more susceptible to cancer than are non-diabetics. Joslin *et al.* (3) report 8.9 per cent of all deaths of persons with diabetes in a certain clinic were due to cancer. Jacobson (5) found that the risk of cancer in diabetic persons was considerably greater than in non-diabetics. Looking at the matter in reverse, Way (6) found that 29 per cent of patients with cancer of the body of the uterus also had diabetes.

Since diet and nutrition are not only important in the treatment but may be involved, directly or indirectly, in the causation of diabetes, it is appropriate to examine various factors which might be responsible for the large diabetes problem in this country. There is substantial evidence that our average diet has improved considerably over the past few decades in terms of the nutrients it supplies. However, a second fact which is apparent in Table 1 is that there has been no appreciable decline in diabetes mortality, as there has been in a few other countries. If anything, diabetes mortality seems to have increased slightly during the twenty-year span represented in the table. It seems clear that whatever improvements in dietary adequacy may have occurred during this period, they were not accompanied by an improvement in the diabetes problem.

It might have been expected that the discovery and general use of insulin beginning in 1922 should have resulted in a marked decline in diabetes mortality. Actually, some decrease in death rates among younger diabetic persons did occur, but not in the older age groups. Insulin is unquestionably a life-saving substance to most diabetic persons, and it does greatly prolong life. In a sense, the use of insulin increased the diabetes problem, since more

TABLE 2

*Expectation of life at birth (7, 8)**

COUNTRY	PERIOD COVERED	LIFE EXPECTANCY	
		Male	Female
		yr.	*yr.*
United States†	1950	66.6	72.4
Canada	1947	65.2	69.1
Finland	1946–50	58.6	65.9
Sweden	1946–50	69.0	71.6
France	1946–49	61.9	67.4
England-Wales	1952	67.1	72.4
Australia	1946–48	66.1	70.6
New Zealand‡	1950–52	68.3	72.4

* Note should be made that the periods from which these data were obtained are not the same. Since longevity is increasing in these countries, this factor should be considered in any comparisons.

† Whites only.

‡ Europeans only.

diabetic persons are kept alive and more are living sufficiently long to get the late complications of the disease, such as gangrene, arteriosclerosis, blindness, and nerve involvement. In the pre-insulin era, most persons with diabetes died from acidosis. In contrast, a recent life insurance study showed that 82 per cent of deaths in persons with diabetes were due to coronary, cerebral, renal, and other forms of arteriosclerosis. In only 4.1 per cent was death due to diabetic acidosis (4).

AGE AND HEREDITY

As noted above, people in this country are living longer and the proportion of older people in our population is increasing. Since diabetes is predominantly a disease of older people, it seems possible that an increase in diabetes mortality could be a consequence simply of the increasing proportion of older people. In part this is true; however, if a correction is made for the age distribution of the population at different periods, there was still no appreciable decline in mortality up to 1948, at least (2). Studies made by the Metropolitan Life Insurance Company on its policyholders suggest that a decline in diabetes mortality may have begun in the late 1940's when the changing age distribution of the population was considered (2). Similar age adjusted figures for the U. S. population as a whole do not bear this out too clearly, however (2). It was not possible to follow this possible trend past 1948, since a change in the method of reporting diabetes deaths which began in 1949 makes it impossible to compare accurately diabetes mortality rates before and after 1948. In addition, an older population cannot be the entire explanation, since in other countries where longevity is as good, or in a few instances better than in this country (Table 2), diabetes mortality has declined, for example, in England and Wales (Table 1).

TABLE 3

*Death rates from diabetes by age and sex (9)**

COUNTRY	DEATH RATES FROM DIABETES†			
	Males		Females	
	Under 45 years of age	45 years of age and over	Under 45 years of age	45 years of age and over
United States	1.9	67.7	2.0	111.6
Canada	2.1	55.6	1.7	91.5
Finland	3.4	9.7	2.5	18.7
Sweden	1.0	16.7	1.9	29.5
France	1.3	18.2	1.5	27.4
Switzerland	1.3	23.4	1.5	39.2
England-Wales	0.9	14.0	1.0	25.2
Australia	1.1	42.2	1.6	78.8
New Zealand	0.9	45.4	0.8	86.7

* White persons only. Data 1948 or 1949.

† Rates per 100,000 population. Rates are not strictly comparable for various countries.

It is well known that there is a hereditary factor in diabetes, since the offspring of parents with diabetic family histories are much more likely to develop the disease than those of parents without diabetic family histories. Therefore, one might theorize that the genetic constitution of people in this country makes them diabetes-susceptible. There are several reasons why this does not seem to be the primary explanation. First, genetic influences are clearest in diabetes which begins in children. Table 3 shows that differences among various countries in diabetes mortality at ages under forty-five are small and unimportant compared to mortality after that age. Second, people of German and Irish descent who immigrated to the United States were reported to be especially susceptible to diabetes (10), but they have a relatively low susceptibility in their home countries. People of Jewish ancestry in this country are very diabetes-susceptible (10), but diabetes mortality in Israel is relatively low (2). Negroes in this country have about the same susceptibility as whites (11), but diabetes is infrequent in the African Negro (12). Thus, it would seem that some other factor(s) is responsible for the apparent diabetes susceptibility of people in this country.

It seems most probable that something rather peculiar to the environment in the United States may explain the high incidence and mortality from diabetes. Three possible factors come to mind. First, a good, generous diet is available to most of our people and is frequently consumed in excess. Second, this country is noted for the constantly increasing use of labor-saving devices, and third, the prevalence of overweight in adults is known to be high (13, 14). These facts suggest a consideration of customary diet, physical activity, and overweight in relation to diabetes susceptibility.

DIET

Much attention has been given to the possible role of customary diet as a contributing factor in diabetes, but without conclusive results. Since inability to metabolize sugar is a characteristic feature of the disease, and since this function requires insulin, it was logical to suspect that high-carbohydrate diets might be a factor. Yet, available evidence seems against this theory. Countries such as Japan (15), Chile, Finland, and Italy, which characteristically have diets providing a high proportion of calories from carbohydrates (16), have quite low diabetes rates (2). The claim has even been made that the low incidence of diabetes in South African Negroes is due to their high-carbohydrate intake (10). Diabetic persons, generally, do not give a history of a high-carbohydrate intake in the years preceding the onset of their disease. Even the animal data are confusing, since Lukens (17) found that diabetes could be induced in cats with rather massive repeated doses of sugar, while Houssay and Martinez (18) found that a high-carbohydrate diet protected against diabetes when compared to a high-fat diet. A high-protein diet gave much more protection than the high-carbohydrate diet.

Geiger has reviewed the evidence that high-fat diets may be a causative factor in diabetes (19). This is a particularly important possibility in this country, since the proportion of fat in the typical diet has been increasing steadily to the point where about 40 per cent of calories now come from fat (20). The fact is often cited that in certain European countries during World Wars I and II where fat became scarce, the percentage of calories from carbohydrates rose and the incidence and severity of diabetes declined remarkably. However, this, like most of the data on relationships of diet to diabetes, is complicated by changes in body weight. It is difficult to distinguish between effects due to changes in diet composition and those due to simple undernutrition with loss of body weight or overnutrition with increased body fat.

Perhaps the only relationship between diet and diabetes is through obesity. Yet it is difficult to escape the impression that there is some more direct connection. Countries such as Canada, Australia, and New Zealand, with dietary patterns quite similar to those in this country (16) also have large and growing diabetes problems. Even within the United States, there are quite marked geographic variations in diabetes mortality (Table 4). Mortality is highest in the Northeastern, North Central, and Middle Atlantic states, and lowest in the South and Mountain and Pacific areas. Actually variations from one section of this country to another are almost as large as the difference between various nations, to which reference has already been made.

TABLE 4

*Diabetes death rates in various geographic areas of the United States (26)**

GEOGRAPHIC AREA	DEATH RATES FROM DIABETES†		
	1950	1951	1952
New England	21.0	22.8	20.7
Middle Atlantic	20.5	20.9	21.6
East North Central	20.6	20.2	19.8
West North Central	17.9	17.0	17.5
South Atlantic	12.6	12.0	12.5
East South Central	10.2	11.0	11.0
West South Central	11.6	11.7	11.5
Mountain	10.3	11.3	11.7
Pacific	10.0	11.1	11.0
U.S. average	16.2	16.3	16.4

* The absolute rates shown in this table are not comparable with the data in Tables 1, 3, 5, since a change in method of reporting vital statistics beginning in 1949 underestimates diabetes rates by about 40 per cent, compared with previous practices.

† Rates per 100,000 population.

It is tempting to try to correlate these regional variations (Table 4) with some of the regional differences in food consumption which are known to exist. However, available data are insufficient to do this with any certainty. It should also be of interest to correlate these regional differences with possible variations in the incidence of overweight. Again, the necessary facts are not available. Some of the regional variations may be due simply to availability of diagnostic and medical care facilities. However, it seems unlikely that this could be the entire explanation when one is comparing death rates.

PHYSICAL ACTIVITY

There is growing evidence and an increasing belief among students of obesity that physical activity, or lack thereof, plays an important role in the genesis of obesity. At the moment it is unclear whether relative physical inactivity, so commonly observed among overweight children and adults, is a cause or a consequence of overweight. However, physical inactivity in people predisposed to diabetes could function as a two-edged sword in its etiology. First, physical inactivity might contribute to the origin and extent of obesity. Second, it is known that sugar can be utilized by actively exercising muscle without requiring insulin. This is the reason that diabetic athletes frequently find their customary dose of insulin to be an overdose when they are exercising strenuously, since the insulin is not needed to burn sugar and hence they become hypoglycemic. Thus, it is possible that the person who is physically inactive puts a strain on his pancreas by requiring more insulin to burn sugar than do individuals who exercise more actively. This may be a factor in the rising incidence of diabetes with age, since one of the characteristic effects of aging is a gradual decline in physical activity and a gradual replacement of lean body tissue by fat.

TABLE 5

Increase in average body weight between ages 25 and 60 years vs. diabetes mortality

COUNTRY*	WEIGHT INCREASE BETWEEN AGES 25 AND 60 YEARS (15, 21, 24, 25)		DIABETES MORTALITY (2, 9)†			
			Over 45 years of age		All ages	
	Men	Women	Men	Women	Men	Women
	%	%				
Japan	0.4	0.4	?	?	2.4	2.0
England	3.6	15.5	14.0	25.2	5.3	10.1
Canada	4.6	19.3	55.6	91.5	16.2	24.5
United States	8.1	15.0	67.7	111.6	20.7	34.0

* Japanese men, 63.7 in. in height—women, 59.5 in. (their national average in 1949); English and Canadian men, 66 in. in height—women, 62 in. (without shoes); U.S. men, 67 in. tall—women, 63 in. (with shoes).

† Mortality rates per 100,000 population in 1948.

Overweight

The very close association of overweight and diabetes has been known for many years and repeatedly confirmed. Whether the known high incidence of overweight in this country can account for its diabetes problem is not entirely clear, although there is considerable evidence suggesting that it does to some extent.

Since approximately 80 per cent of the diabetic persons (U. S.) are, or have been overweight, and since it is a common medical observation the world over that diabetes is primarily a problem of the overweight, it would be of considerable interest to examine the comparative incidence of overweight in various countries as a possible explanation for the marked variations in diabetes mortality shown in Table 1. Unfortunately, few countries seem to have collected data on overweight. However, some comparisons can be made between the United States and England, which have quite different diabetes mortality rates (Table 1).

From personal observation, overweight seems to be considerably less common in England than in this country. This observation seems to be supported by the studies of Kemsley (21), who compared the height and weight of English subjects in 1884, 1929–32, and 1943 with U. S. height-weight tables[2]. American adult males and females were taller and heavier than those in England. However, when the

[2] Although these tables (22) are derived from data collected primarily between 1885 and 1900, they still are valid for white males and females as judged by comparison with height-weight data collected in 1950. Small differences were observed, indicating that men may be about 5 lb. heavier and women 3 to 5 lb. lighter in 1950. These differences were less in magnitude and less consistent at ages above thirty-five years (14).

effect of height was eliminated, American men were still about 10 lb. heavier and women 4 to 6 lb. heavier than their English counterparts. Furthermore, the increase in weight with age was considerably greater in American than in English men. A further point from Kemsley's studies is that average body weight in the English subjects seemed to have declined in both men and women between 1884 and 1943. The possible significance of this in view of the decline in diabetes mortality in England should be noted.[3]

It is well known that average body weight (U. S.) increases up to age fifty to fifty-five; also, even if weight is held constant, the percentage of body fat increases with age (23). Also, diabetes is a disease most common in people over forty-five years (Table 3), and its incidence increases with age through the sixth decade of life. In view of these facts, and if overweight is causally related to diabetes, one might expect some correlation between the tendency of a population to add pounds of body weight after true growth stops and mortality from diabetes in the same population. Such a correlation is attempted in Table 5 by relating the percentage gain in average body weight between the ages of twenty-five and sixty years to diabetes mortality after age forty-five. A rough but not perfect correlation is evident. Women, who tend to gain more weight, show higher diabetes rates. The Japanese, who gain little weight as adults, show very low diabetes rates and no appreciable sex difference. The failure of the English women to exhibit a rate comparable to Canadian or U. S. women may be explained by their tendency to gain weight later in life than U. S. women, as noted by Kemsley (21).

Obviously, these correlations are somewhat speculative and do not establish causation. It is true, and has been stated often, that there is no proof that overweight or excess body fat causes diabetes. Both may be manifestations of the same cause(s). When the precise etiology of diabetes is unraveled, it seems most likely that effects of diet, physical activity, overweight, and heredity will all be intertwined and interrelated. In fact, it probably is not even completely valid to speak of diabetes as a single entity, due to the many differences noted among diabetic persons as to insulin requirements, tendency to acidosis, and many other aspects suggesting not only different degrees of severity but different defects in metabolism.

Nevertheless, from the practical standpoint, it seems clear to this observer that all of the scientific evidence available to date supports the position that weight control can be a practical and effective point of attack on the diabetes problem in this country. It is beyond debate that most obese diabetic persons appear to benefit from weight reduction in that the manifestations of their disease are ameliorated. Further, it is well established that the incidence and severity of diabetes declines strikingly when a population is forced to lose body weight. The same benefit would certainly be expected if obese subjects in a population voluntarily lost weight, or if overweight were prevented.

In this connection it may be of interest to note the most recent data on diabetes mortality in the United States. Mention was made earlier of a possible trend downward in diabetes mortality in the late 1940's when effects due to aging of the population were eliminated. The most recent data indicate a continuation of that trend. Diabetes mortality in 1954 was 9 per cent less than in 1949, in spite of the rising older population (26). The reasons for this apparent decline are not known. It is not beyond the realm of possibility that it may be due in part to the growing consciousness of the American people of the importance of weight control. There is some evidence that body weight in women has declined somewhat in recent years (14).

[3] Some of the apparent decline in diabetes mortality in England in 1948 (Table 1) may have been due to the earlier adoption and use of the Sixth Revision of the International List of Causes of Death than in other countries. The Sixth Revision resulted in changes in certification and classification of causes of death so that diabetes was under-reported when compared with practices under the Fifth Revision.

Summary

This discussion has attempted to draw attention to diabetes as a public health problem peculiarly important in the United States. Possible roles of diet and nutrition in the etiology of the disease have been presented. The role of overweight and the importance of weight control as an approach to diabetes prevention has been emphasized.

Diabetes and overweight typify the kind of problem with which those working in diet and nutrition must become increasingly involved. The science of nutrition has contributed heavily to the health advances of the past half-century and should contribute equally in the problems which lie ahead. However, problems such as diabetes and overweight demand a more intense study of possible effects of over-all diet composition and the more subtle, long-term effects of improperly balanced diets. Our present knowledge permits definition of an adequate diet with considerable precision, but an optimal diet remains to be defined and developed.

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Oriental Flavor

Skilled cooks throughout the world today prepare delicious, appetizing, and satisfying food with the aid of herbs, spices, and flavorings used in almost innumerable combinations. Nearly all of these ingredients originated in the Orient.

Until only a few hundred years ago, in all of Europe and America, the essential and generally used seasoning was salt. There was no variety in the flavor of various foods, even remotely comparable to the foods we know today. Then, spices, herbs, and flavorings began to trickle in from the Far East. In no time, the demand for them was so great that they commanded fabulous prices. Their importation increased by leaps and bounds, and several small wars were fought over the control of the spice trade.

Today, of course, herbs and spices from every part of the world are available in Europe and America at moderate prices. Next to salt and pepper, the most popular are: mustard, cinnamon, nutmeg, and cloves. Among flavorings, the most popular is the vanilla bean, the only one which originated in America.

One of the most interesting of our food "improvers" is curry. It is applied to a great variety of dishes, especially those of Indian origin. In the Orient, where the staple food of many millions is a bowl of rice or other cereal, some kind of relish is required to make it attractive to the palate—that is curry's function.

In India, the ingredients used in preparing the many kinds of curry are numerous: anise, coriander, mustard, poppy seeds, allspice, almonds, assafoetida, cardamons, chilies, cinnamon, cloves, coconut, coconut milk and oil, cream and curds, cumin, fenugreek, charoonjie nuts, garlic, onions, ginger, lime juice, vinegar, leaves of the curry leaf tree, mace, mangoes, nutmeg, pepper, saffron, salt, tamarinds, and tumeric. The cumin and coriander seeds are usually roasted. In India, the spices are ground fresh every day, which gives the Indian curry its marked superiority in flavor over dishes made with the prepared curry powders of the European and American markets.

Chutney or chutnee (in Hindustani *chatni*) is a relish or seasoning that is also of Indian origin. It is, of course, used as a condiment and is made of sweet fruits, such as mangoes, raisins, and so on, with acid flavoring from tamarinds, lemons, limes, and sour herbs, with a hot seasoning of chilies, cayenne pepper, ginger, and many spices.—*From the Montague Messenger, n.d.*

Psycho-Social Correlates of Obesity

Failure of "Calorie Collectors"[1]

MARVIN B. SUSSMAN, Ph.D.[2]

Department of Sociology, Western Reserve University, Cleveland

IN APRIL of 1955, a Philadelphia medical college professor told the 189th convention of the Medical Society of New Jersey that "the drive to make overweight unpopular might be started in our high schools." He continued, "If the Popeye comic can make children eat spinach, surely the adult can be influenced by propaganda along the same vein" (1). A week later, a Chicago judge "sentenced" a woman defendant in a divorce contest to "eat less" and postponed decision on the case for four months pending the outcome of her dieting (2). More sedate and scientifically ordered was the Weight Control Colloquium held in Ames, Iowa, in the winter of 1955. Leading researchers came to these meetings and their discussions of weight control problems, measures, and programs attracted nation-wide attention (3). Thus, bizarre and extreme, as well as scientific solutions point up the concern regarding obesity in our society.

Recent statistical studies of mortality rates by Dublin and Marks are sobering (4, 5). Overweight men and women have mortality rates 50 per cent higher than the general average of life insurance holders. When specific causes of deaths are separately studied, the excessive mortality of overweight persons—75 per cent in women and 42 per cent in men in such a disease as heart failure—is striking, since heart disease accounts for approximately 50 per cent of all non-violent deaths in this country. In medical research, obesity and degenerative heart disease have become a focal point of study.[3]

The sociologist and social psychologist are concerned with the overweight person—his problems and general adjustment in the society—because obesity, as we will see, is probably as much a social as it is a medical and nutritional problem.

"Calorie Collectors" Group

In the winter of 1953 I was asked by the Bureau of Nutrition of the New York State Department of Health and the City Health Commissioner of "Lightburgh" to spend a few days checking into the activities of a group called the "Calorie Collectors."[4] Nine months earlier, 162 persons who considered themselves overweight and who, in most instances were unknown to one another, met on a cold wintry night in the City Hall to form a society for the purpose of helping each other lose weight. Significantly, Calorie Collectors was a spontaneously formed group without professional sponsorship, and at this initial meeting, few of the persons knew exactly what they were going to do, how to organize, or how to develop a program to effect weight reduction.

The large attendance at that first meeting was never repeated; the curious did not return; others found the program uninteresting or not to their liking; a number compared their own size and weight to others and decided that they were not overweight after all; several had transportation or baby sitter problems; and others left because of the internal conflict and struggle for leadership within the group. At each successive meeting, fewer returned until about nine months after that initial meeting only a half dozen of the original group remained. My task was to find out what happened and why.[5]

To do this I spent six months collecting data from a number of sources: 103 telephone interviews with former members; examination of records, minutes, and news stories about the group; intensive interviews with the leaders of the group; addi-

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[2] The writer is indebted to John H. Browe, M.D., Director, Bureau of Nutrition, and to Walter E. Boek, Research Anthropologist, both of the New York State Department of Health, whose assistance made this project possible. The material contained herein represents the analysis and interpretation of the writer.

[3] The relationship of obesity to heart disease has been studied by a number of investigators. Among the more important researches have been those conducted by the Army and by Keys of the University of Minnesota. (6–9).

[4] To give anonymity to the group and its members, names and places have been changed.

[5] A more complete report of this group can be found in "The Calorie Collectors: A Study of Spontaneous Group Formation, Collapse, and Reconstitution," to appear in a forthcoming issue of *Social Forces*.

tional interviews with health workers, doctors, nutritionists, and other professional people who had contact with the group during its active existence; and a review of the literature on group behavior, obesity, and nutrition.[6]

What influenced so many persons to respond to the newspaper stories announcing the formation of the group? What were some of the obstacles or "roadblocks" in the socio-cultural environment which hindered their efforts at weight reduction? What can we learn from the failure of this group which might be useful in understanding and perhaps successfully promoting weight control groups?

The majority of members of Calorie Collectors were middle class, married women who in weight ranged from 125 to 300 lb.; each considered herself to be anywhere from 10 to 100 lb. overweight. Ages ranged from eighteen to sixty-five years.

Observations in group sessions and information gained from personal and telephone interviews indicated a variety of personality types, with the majority appearing to be friendly and responsive to most situations, and with a proneness to verbalize extensively. One might speculate that this pattern may represent an adjustment to cultural expectations that fat people should be jolly and carefree (a mechanism to cover sensitive feelings, insecurity, and shame regarding their obeseness)—or perhaps membership in a group of similar souls precipitates latent verbal expression. On the other hand, it was observed in a number of cases that members were quiet, unresponsive, and withdrawn.[8]

One important question that should be answered is: why did so many obese persons join a group for the purpose of weight reduction and control, and furthermore, what did they expect the group to do for them? To most members, it was obvious why they joined the group. In our interviews, 98 per cent stated that they were "fat and wanted to reduce." When asked, "Have you been on a diet during the last year?" 55.3 per cent replied, "Yes"; 29.9 per cent, "No"; 3.2 per cent, "Not really"; and 11.6 per cent, "Off and on." The desire or feeling of need to reduce was strong but obviously not strong enough to develop a pattern of action (dieting) which would result in fulfilling a basic need.

Significantly, of those members who had been on low-calorie programs for one to fifteen months, over 50 per cent had followed diets less than six months, 24 per cent were uncertain as to the time period of their diet or were, as they said, "Off and on." All members on diets were under medical supervision. All had experienced weight losses ranging from 5 to 75 lb., with the average loss being 18 lb. This latter statistic is questionable, since few of the members kept an accurate weight loss chart. Eighty-three per cent stated that they had sufficient information about dieting, 14 per cent said "No," 3 per cent were uncertain. Of the dieters, 56 per cent took pills with their low-calorie meals, 23 per cent did not, and 21 per cent did not answer the question.

In summary, 71.1 per cent of the members were or had been on a diet at some time or other, and all were under medical supervision. They all had experienced some weight loss or at least stated this, but apparently these losses were insufficient and they, therefore, felt motivated to join the group.

It is probable that the stated desire of members to lose weight was not the primary reason for joining Calorie Collectors. More likely it was internal conflict and instability within the individual, the result of failure to meet the expectations of family and society in controlling weight and presenting a reasonable appearance which prompted a person to join the group. Membership implied convergence toward methods, norms, and standards for the attainment of desired objectives, i.e., the meeting of expectations, and the consequent reduction of insecure feelings and ego tension.[9] This failure, real or perceived, to meet expectations is largely the result of three socio-cultural conditions: (a) the unstable and sometimes embarrassing position accorded overweight persons, especially women, in their groups and the society at large; (b) role inconsistencies of women in the family; and (c) the lack of institutional support for obese persons and their problems.[10] A more complete analysis of these conditions follows.

[6] A recent and extensive compilation of writings in the field of group behavior was made by Strodtbeck and Hare (10). The literature which served to orient me to the medical and psychologic aspects of the problem is too extensive to list here; therefore, only a few references will be cited. Rynearson and Gastineau include a bibliography of 422 references in their book, *Obesity* (11). Keys and Brozek have also presented an extensive review (12), and Mayer has published a paper (13) listing 256 references. These offer the best coverage.

[7] The data are derived from a sample of 113 cases, 87 per cent of whom were married. Average age was 38.7 years. As to social class, the group was divided: 26.3 per cent upper middle; 51.6 per cent lower middle; and 22.1 per cent lower. The basis for determining social class has been published in a previous study completed by the author in which housing areas and occupations were used as indices of social class position.

[8] The study of the relationship of personality to obesity is an interesting problem for further research. Kretschmer (14) and Sheldon and Stevens (15) attempt to relate body types to personality. Stapel finds (16) that easy-going, talkative, convivial persons tend to be "rounded" in physical type.

[9] Sherif and Harvey have demonstrated experimentally (17) the effect of loss of norms and standards on individual and group behavior.

[10] I am confining my analysis to the problem of overweight women, since my data are limited to the latter sex. Moreover, differentiation of sex roles in our culture makes the problem of overweight men one of a different order. At the time of the initial meeting, seven men appeared, six did not return, the seventh remained a while, became treasurer, and later absconded with some of the funds.

Unstable Social Position of Obese Women

Overweight women (like mothers-in-law and psychiatrists) are made the butt of innumerable jokes. They are constantly kidded about their size and failure to lose weight. Present-day advertisers remind the heavy of her condition. In magazines, she reads, "Reach for _____ instead of a sweet," or "There are less calories in a spoonful of sugar than in an orange," or "Drink 'Malarkey' beer; it has less calories per quart than any other," or she might stare at a picture of a television star advertising a reducing pill, "Who in heaven's name *wants* to be Miss Pudgy of 1956." If she is on a diet, she may worry about these advertisements—should she follow her present diet, change brands, take pills, or perhaps starve herself? She may eat something not on her diet, feel guilty about it, and then attempt to remove this guilt by eating some more. She may feel that lean persons are watching her, especially when eating, and are secretly laughing at her plight and efforts to reduce; consequently she may often feel uncomfortable in the company of more slender persons.

Membership in Calorie Collectors is a substitute for the failure to compete successfully with more slender persons in other groups. The overweight may view her heaviness as a hindrance in the struggle for status and her physical appearance as unfit, according to popular conception of what a leader should look like. This is especially true in a culture in which role models are perceived in terms of the Marilyn Monroe norm. Her membership in a fatties group helps her develop a common identity with others, the sharing of expectations, and perhaps more important, the opportunity, if she wishes to take it, to compete on equal footing for status and recognition.

Role Expectations of Women

In our society, differential role expectations of women in marriage may be related to the problem of obesity. A woman, increasingly burdened with the task of rearing and caring for a family, is expected, at least by her husband, during the middle-age period of life when persons seem to "normally" put on a few extra pounds, to maintain the same youthfulness and attractiveness which was hers in the early years prior to and immediately after the marriage. Also, for some women, there is the ever-present competitive threat for her husband's attention from his female associates in the work world, and her fear in this matter increases after she reaches forty. Obesity may keep her from meeting her husband's expectations. To counteract this threat, she may expend much too much time and energy to keep herself attractive to hold on to her husband and may do this at the expense of her other family roles.

On the other hand, there is some expectation among certain ethnic groups in our society that wives and mothers put on weight. In conforming to this expectation, a married woman indicates that she is working hard for her family and is effectively carrying out homemaker roles. Extra weight may be viewed as a protection against illness, and when ill, as insurance for recovery. Also, a non-fat mother may be accused of neglecting her spouse and offspring by subjecting them to "meager diets" and thus endangering their health and shirking her responsibilities.

Lack of Support in Reducing

If a woman happens to be overweight and wishes to reduce, she is apt to find that the demands of her role as homemaker do not readily permit her to achieve this objective. One of her responsibilities is meal preparation. Her growing family may effectively utilize high-calorie meals, and she may feel obligated to keep up with them. At least there is pressure in this direction, and it is a great temptation to have a piece of pie she baked for the family or a portion of ice cream which her husband brought home for dessert. Her attendance at parties or performance of the duties of a social hostess for her husband may deter her dietary program. Her family may find it difficult to adjust its eating patterns if she requests it, and she is likely to feel guilty for submitting them to her regimen.

Also, she finds that high-calorie foods (starches, fats, and sugars) are readily available and inexpensive when compared to the foods of the dieter. Low-calorie foods which are hunger satisfying, such as lean meats and fruits, fresh or dietetic pack without sugar, are likely to be more expensive than conventional preparations. A dieter who eats lean beef while the rest of the family eats hash may feel guilty or at least unhappy about this obvious discrimination which may become a source of intra-family tension.

When a person is overweight, the obvious response of the layman is "why not stop overeating." The solution is not so simple. In fact, there is uncertainty whether obesity is largely due to psychologic, physiologic, genetic, or a combination of these factors. In spite of the questions regarding the etiology of the disorder, however, there is much in the literature which makes a strong case for the dominance of socio-psychologic determinants. One writer symbolizes this orientation in the expression, "Imprisoned in every fat man a thin one is wildly signaling to be let out."[11]

While the layman finds it difficult to understand the link between the overeating syndrome and complex psycho-social-medical variables, many doctors and other professionals are similarly baffled. Accord-

[11] Brosin (18) used this expression to indicate Bruch's explanation (19) of the causes of obesity. It was originally taken from Palinurus' book, *The Unquiet Grave* (20).

ing to the members of Calorie Collectors who were telephoned, 26 per cent stated that their physicians did not understand them or their particular problems, most indicating that the doctors criticized them unduly when they did not follow their prescribed diet. In Lightburgh, social and public health agencies had few, if any, specific programs designed to help the overweight person with her problems. In fact, these agencies refused to support the Calorie Collectors during the organizing period of the group and in effect denied the complexity of the overweight problem. They echoed the well known theme, "Why don't you stop overeating?"

It is under these conditions, ones generated in the larger society, that persons joined Calorie Collectors, if not to lose weight, then to have the comfort of sharing with others their common miseries and hopes. Members indicated that they could not successfully cope with the problem of overweight by themselves or with the help of their friends and families. They stipulated a need to belong to a group where they could find sympathy, encouragement, support, and as one member said, "to hold hands."[12]

Reasons for Group Failure

The group failed in its efforts at weight loss because of poor leadership and the lack of institutional support from health and social agencies in the community. Leadership as it existed in Calorie Collectors was one of attainment of personal influence and power rather than achievement of group goals, and the result was ultimate factionalism and disorganization of the group.

The leaders or would-be leaders used the group to obtain publicity and notoriety for themselves, and their behavior promoted group instability, uneasiness, and tension among members. To some extent, they resisted offers of professional assistance, viewing such offerings as potential threats to their already weakened leadership positions. Their program emphasized social activities, such as eating low-calorie foods at pot luck suppers. At these sessions, everyone ate too much by "sampling" all the varieties of food and in taking several helpings. Serious intenders soon recognized the folly of this kind of activity. Thwarted in their efforts to redirect the group to a more serious consideration of the problem, some remained members, their objections silenced, while others left the group. When the ill-advised, socially-oriented leaders withdrew or were removed from office, an effort was made to re-establish the group with its original objectives, appropriate activities, and with serious leadership.

As we know, groups do not operate in social vacuums but are influenced by persons, situations, institutions, and events which occur or are found in the larger socio-cultural environment. Members of Calorie Collectors were negatively affected by their families; the medical society offered them only nominal support; no social agency or civic body was willing to actively sponsor or house the group; and the newspapers in their stories expressed the frivolous and comical side of obesity and minimized the seriousness of the group's efforts. These representations of the outside culture perpetuated the group's insecurity; reduced the strength of individual motivation; and immobilized efforts at goal achievement. The Calorie Collectors, unlike Alcoholics Anonymous, had no chance to develop a religious ethos or to become sober overnight and start anew. So to speak, they carried their girth with them and were not in business long enough to get religion.

Professional Health Workers' Opportunities

Based on this study of failure, I would like to indicate how professional health and social workers can assist already organized local groups of overweights to develop effective programs of weight reduction and control.

(a) The leaders of groups organized for the purpose of weight reduction and control should come from the membership. Such emergent leaders are likely to possess deep motivational patterns. Some may desire notoriety or popularity; others may crave attention, recognition, or authority; and still others may be moved by fear or the need to be identified with a group. Regardless of their motivations, advisors to overweight persons should encourage and support the "serious" dieter's attempts at leadership in weight control groups. Serious candidates for leadership roles are most likely to be: persons who are "diet repeaters" (persons who have had some success at weight loss but who have not been able to maintain it); young persons who *are* or *perceive* themselves to be in status-competing situations, e.g., for jobs or spouses, and whose obesity is recent and not a problem of long standing; and individuals whose overweight, according to their physician's diagnosis, contributes to a medical condition.

(b) Related to good leadership is the need for the group to have a strong supporting organizational structure for the purpose of enabling it to meet recurrent crises, such as illness of leaders and members; dropouts due to loss of interest, weight, or mobility; and other losses due to alternative and competing choices of members and their families, e.g., going with the family to a movie vs. a group

[12] Most reported group studies suggest a general desire on the part of participants to lose weight and do not develop the importance of the group structure to this process. Also, these studies report limited success in the maintenance of weight loss or achievement of it. A pilot study in the Boston area in 1949–50 reported some success in weight loss, but follow-up studies have been discouraging (21, 22). A three-year study on the group approach to weight control has also been going on at the Herrick Memorial Hospital, Berkeley, California. Limited success in weight loss was reported (23–25); here also studies are still in progress.

meeting. To meet this situation, the group needs a series of well defined organizational positions, with appropriate status and role expectations, with privileges and responsibilities assigned to each.

(c) Group programs should be "vigorous" and varied in their activities. Meetings should be at least once a week. Programs should include, in addition to discussions, talks, demonstrations, films, and lectures on the problems of obesity, such activities as dancing, dramatics, arts, crafts, swimming, gymnastics, and other group-decided and oriented activities. Programs of this nature enable members to develop social and physical skills and to experience a sense of achievement, usefulness, and adequacy. Also, these activities enhance the development of group standards and in-group identification which helps achieve group objectives and maintain internal controls. Low-calorie diet suppers and other forms of eating should be avoided, or at least minimized, in programs for group meetings, while mildly competitive contests in weight reduction are to be encouraged.

(d) Support to the organization of weight reduction groups and their programs should come from the leaders in the power and social structure of the community. Members of high-prestige organizations, such as medical societies and service clubs, in addition to providing their sanction to the purposes of the group, can also offer medical and family counselling services which are concomitant to an effective program of obesity control. From a sociologic viewpoint, members of organized overweight groups come from the middle and lower social classes of the community. In most communities, groups of low social status seek the approval and support of groups and individuals of higher social status, the latter most frequently serving as role models for the former. Since power, authority, and prestige are attributes of upper class membership, social change—to be effective—must be supported by persons with position. Only then are programs of any type likely to succeed in the attainment of given objectives.

(e) Expansion of groups and the organization of new ones should come primarily by referrals of present or former group members and with minimum rather than elaborate publicity. Groups should be of manageable size, comprised of approximately ten to fifteen members. A group of this suggested size enables its members to become intimately acquainted with each other and to maintain high motivational and aspirational levels and group standards. The group should be encouraged to adopt a name and other appropriate symbols indicative of the seriousness of the group's purpose.

(f) Members should be made aware that participation in a group may by itself not produce the desired objective of weight loss. Reducing is primarily an individual concern. The complexity of variables related to its etiology and development precludes the offering of panacea-type formulas for weight loss, even those which are indicated in well organized groups. Also, at present, many phases of group behavior are only vaguely understood, e.g., ridicule used as a social control in a group may effectively bring one person "into line" but cause or precipitate emotional upset or breakdown in another. In the latter case, the group may actually be a deterrent to individual goal achievement. Thus, complete reliance on the group for the solution of an overweight problem can be harmful for some persons. Members should be encouraged to consult individually with physicians, nutritionists, social and health workers, about their particular problem. Group activity can be effectively used as a supplement to individual therapy. An amalgam of both approaches skillfully employed may produce desired weight reduction and control.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Jonathan Pereira—May 22, 1804–January 20, 1853

In 1843 when Jonathan Pereira published his *Treatise on Food and Diet*, modern organic chemistry was still in its infancy and Liebig was laying the foundations of physiologic chemistry. At that time, food was classified under the four headings given by Prout: aqueous, saccharine, albuminous, and oleaginous. Pereira, who kept closely in touch with the current researches of Boussingault, Liebig, and Dumas, saw that mineral salts, or as he called them, "the saline alimentary principle," were also essential. He pointed out that "lemon juice which constitutes one of our most valuable antiscorbutic foods, does not owe its efficiency to water, sugar, albumin, or oil." Pereira used the term "proteine" in his book and the whole treatise was a definite step forward toward an understanding of nutrition and dietetics.

Pereira himself carried on no original investigations in the field. He was a well-trained chemist and physician, and in 1832 published the first part of his major work, *The Elements of Materia Medica*, which received wide acceptance. During the preparation of that book he saw the need for a detailed and reliable treatise on food and diet. The resulting book was well authenticated with tables, footnotes, and references to the work of Liebig and others. It is also of interest for the section on dietaries for children, paupers, naval service, troops, emigrants, prisons, and hospitals. Diet tables in use in those types of institutions at the time are given, and a glance at them will reassure anyone who questions the progress that has been made in dietetics in the past 100 years.

Jonathan Pereira was born at Shoreditch, London, May 22, 1804, and his father was an underwriter at Lloyd's according to one source, though another describes him as a merchant in moderate circumstances. At fifteen years of age, young Pereira was articled to a surgeon and apothecary who was a general practitioner in the City Road. Before the expiration of three years, this gentleman became mentally deranged and the indentures of his pupils were cancelled. Consequently, in 1821, Pereira entered the Aldersgate Street Dispensary where he studied chemistry, materia medica, and medicine. Two years later, not yet nineteen years of age, he became apothecary at the Dispensary and started a class for students to whom he gave private instruction preparatory to their examination for license by the Society of Apothecaries. During this period of his life he translated the *London Pharmacopeia*, published *A Selection of Prescriptions* in English and Latin (it went through eighteen editions), and prepared a *Manual for Medical Students*. He qualified as a surgeon in 1825 and began collecting material for his book on materia medica which was published in 1839. He lectured in chemistry at the Dispensary and in 1828 began his lectures on materia medica; his classes, which were always crowded, were the largest in all London. Five years later he was appointed lecturer in chemistry at London Hospital.

When Pereira was married in 1832, he resigned the post of Apothecary to the Dispensary and went into general practice. When the Pharmaceutical Society was established in 1842, he was invited to give lectures on food composition and these he amplified into his *Treatise on Food and Diet* which was published the next year. The M.D. degree was obtained from Erlangen and in 1845 he was elected a Fellow of the Royal College of Physicians.

Pereira was an exceedingly hard worker; for many years he worked 16 hr. a day, writing, lecturing, and in practice. He spared neither time nor money to find the truth of any scientific problem on which he was working. The purity of drugs and their chemical, botanical, and physiologic properties were of particular interest to him. He published some thirty-five papers, mostly in the *Pharmaceutical Journal*, and several books. A fall down the stairs of the Hunterian Museum caused his death January 20, 1853. A medal was struck in his memory by the Pharmaceutical Society, and a bust of him by McDowell was placed in the London Hospital.

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Magazines and newspapers are reported most frequently by homemakers as sources of information on foods and nutrition. The most common food problems with which they want help are those related to meal-planning and budgeting.

What the Homemaker Knows about Nutrition

IV. Her Food Problems, Shopping Habits, and Sources of Information[1]

CHARLOTTE M. YOUNG, Ph D., BETTY GREER WALDNER, and KATHLEEN BERRESFORD

School of Nutrition, Cornell University, Ithaca, New York

PREVIOUS reports in this series have dealt with the nutritional knowledge and feeding practices of 645 homemakers in Rochester and Syracuse, New York. Also, the level of nutritional knowledge was studied in relation to the adequacy of feeding practices (1–3). This report covers further information obtained in four additional areas: the problems which homemakers had in planning, buying, and preparing food; family practices in meal-planning and shopping; the sources from which homemakers believe they obtained information on what to feed the family; and finally, certain data on food habits. Information of this type should have obvious application for all interested in dispensing food and nutritional information to homemakers, either individually or en masse, and for those interested in homemakers' shopping and food-planning habits. Such knowledge may well cause us to re-examine methods used in educating the public and may lend encouragement to venturesome scientists who have used the more popular channels of mass communication. It has been interesting to compare results from our study with those of studies in urban and rural Virginia (4, 5) and rural New York State (6).

Methods

Information was obtained from a cross-section sampling of 331 Rochester and 315 Syracuse homemakers by means of personal interview. The instrument used was an open-end type of questionnaire on which the interviewer recorded responses as nearly as possible in the respondent's own words. On the average, interviews required about 1 hr. The samples were shown to be quite representative of homemakers in the two cities (1), except that in Syracuse the average educational level was slightly higher than in the 1950 Census. In both our sample and the Census figures, the educational level of homemakers in Syracuse was somewhat higher than in Rochester.

In soliciting information relating both to the homemaker's problems in planning, buying, or preparing food for her family and to the sources from which she believed her information on these subjects had come, two types of questions were used: first, an open-type of question to encourage the homemaker to express her thoughts freely in her own words; later, replies were elicited to questions dealing with specifically stated problems and sources.

Answers in each of the areas covered by this report were studied in relation to the age and level of formal education of the homemaker, to the family income level, and to whether the homemaker had studied about what to eat.

Meal-Planning

The first question asked the homemaker dealt with what she thinks about in planning meals for her family. The replies, though expressed in various ways, fell into the eight categories presented in Table 1. Responses were expressed in terms of the percentage of homemakers from each city who gave each type of reply.

It is interesting that, although the percentage of homemakers in each city who mentioned each category differed slightly, nevertheless the responses were in the same rank order. Probably in considering the magnitude of the response, "what's good for them," it should be realized that the interviewer introduced herself as being from the School of Nu-

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TABLE 1

*What the homemaker thinks about in planning food for family**

TYPES OF RESPONSES	PERCENTAGE OF HOMEMAKERS	
	Rochester	Syracuse
"What's good for them"	43	46
Likes and dislikes	30	37
Cost of food	24	27
Items of food	16	27
Variety	16	19
Ease of preparation	6	8
Special diets	6	7
"To fill them up"	4	2

* Homemakers frequently gave more than one response.

trition at Cornell University. However, such a response also was given most frequently by rural New York State homemakers in Abell's study (6). The response, "items of food," means that the homemaker responded by naming foods for a menu. In Abell's rural study, economy or cost of food occupied a much less prominent role than in our study.

Younger homemakers were more concerned with what was good for their families or with providing a balanced diet, with the cost of food, and with ease of preparation than the old homemakers. Answers of the old group were more in terms of food items, food likes and dislikes, and concern for special diets. The answers of middle-aged homemakers were in an intermediate position. A very similar pattern of differences was found for homemakers of various educational levels. The principal difference found as the education of the homemaker increased was that a higher percentage expressed concern with planning what was "good for them" and to some extent, with "variety." There was somewhat less concern with food likes and dislikes.

There was no consistent pattern of any response with changes in family income level. A higher proportion of homemakers who had studied foods was concerned with what was "good for them," with the cost of food, and with variety than were those who had not studied what to eat. The reverse was true for the likes and dislikes item.

Various questions were asked about meal-planning and shopping. One-fifth of the homemakers in both cities said they did not plan meals before they shopped, 60 to 70 per cent claimed to do so, while 12 to 20 per cent said they "sometimes" or "partially planned." However, in reply to the question, "When do you usually decide what you are going to serve for a meal?" only one-fourth planned a week ahead or when shopping. About one-tenth, two or three days ahead; one-fifth, a day ahead; one-third, the day of the meal; and one-tenth, "the last minute." In rural Virginia (5), over half of the homemakers said they worked out what to serve as they planned the meal; another third planned one day ahead. Urban New York homemakers appeared to do somewhat more advanced planning.

Shopping

The major portion of food shopping in both cities was done weekly or at least the "big shopping" was done weekly (64 per cent in Rochester, 54 per cent in Syracuse). Twenty to 30 per cent of the homemakers shopped two or three times a week and only 10 per cent daily. Somewhat less than 10 per cent had other miscellaneous shopping plans.

In approximately two-thirds of the homes in both cities, the homemaker did the shopping. An additional 17 per cent stated that they were accompanied by their husbands; in only 9 per cent of the homes in either city did the husband do the shopping alone. Miscellaneous other arrangements, such as sending the children, were used by less than 10 per cent. These findings are similar to those reported in Minnesota cities (7).

Food Expenditures

Nearly two-thirds of our homemakers reported that they usually had a certain amount which they allowed themselves for food expenditures each week. About 2 or 3 per cent said it "varied," while for the remaining one-third no specified amount was allowed. Both the mean and median food expenditure per family per week in Rochester and in Syracuse was $25. The mean food expenditure per person per week in Rochester was $7.35; in Syracuse, $7.19. The median was $6.75 for Rochester and $6.67 for Syracuse. In other words, in both cities, the mean and median food expenditure per person per day was roughly one dollar. Only one-fourth of the homemakers in rural Virginia said they limited food expenditures to a definite amount of money each week or month. Also, in 1951, only 13 per cent of them spent $16 or more a week for food for their families. For city families in Minnesota in 1953, the median family food bill per week was approximately $21 (7).

The homemaker was also asked, if she had all the money she wanted, what changes if any she would make in her food purchases. Two-thirds said they would not make any changes; about one-third that they would. Half to three-fourths of those who would make changes would buy better cuts of meat; about one-fourth would buy more meat. Smaller percentages of the homemakers would buy special or fancy foods, larger quantities of foods, more milk, and more fruits or frozen foods. However, better quality meat and more meat were the overwhelming choices.

In both cities, 92 per cent of the homemakers felt that their families were getting all the foods they needed; 1 per cent did not know; 7 per cent felt they were not. The majority of reasons given for not using all foods needed related to problems in getting various family members to eat certain foods or enough of certain foods; in only one instance was lack of money mentioned; a few homemakers ad-

TABLE 2

Sources of information about feeding family

SOURCE OF INFORMATION	PERCENTAGE OF HOMEMAKERS	
	Rochester	Syracuse
Mother or relative	28	35
Common sense	28	17
Magazines or papers	24	30
Cook books	18	18
School	8	15
Neighbor or friends	8	6
Physician	9	8
Books and bulletins	8	9
Radio and television	7	11
Cooking schools	3	2

mitted they did not plan well or couldn't cook adequately. However, in general, it would not appear that homemakers could be appealed to on the basis of concern over adequate feeding of their families. A smaller percentage of rural Virginia homemakers, 61 per cent, thought their families were getting about the kinds of foods they needed (5). Eight out of ten Richmond, Virginia homemakers in 1947 thought their families were getting well balanced meals (4). In contrast to the urban New York homemaker in 1953, the urban Virginia homemaker cited high cost of food as the main factor causing stress (5).

Factors Related to Meal-Planning and Shopping

The effects of various factors on the meal-planning and shopping practices of our homemakers were not striking or, in many instances, necessarily consistent in the two cities. Though more of the younger and the better educated homemakers would change food purchases with more money available, the income level was the factor which had the biggest influence. Definitely more of the lower income families indicated they would make changes in food bought if they had all the money they wished. In Syracuse, where the educational level was higher and more homemakers had studied what to eat, a higher percentage of the lower income homemakers would have bought more milk, eggs, fruit, and larger quantities of food generally if more money were available.

The younger, better educated homemakers and those who had studied foods did more advance meal-planning and less last-minute planning. The reverse was true in the lower income brackets. This was coupled with much more day-by-day or meal-to-meal shopping and with the husband doing more of the shopping and the wife proportionately less. The age of the homemaker, her educational level, and whether she had studied what to eat were interrelated. As a result, younger, better educated homemakers did more advanced planning of meals, more weekly and less daily shopping, and more of the shopping. It is also true that more of this group believed their families were not getting all of the foods they needed. This was also true for the homemakers of lower income level, though in only one instance was money mentioned.

TABLE 3

Responses to specific questions on sources of information

SOURCE	PERCENTAGE OF HOMEMAKERS	
	Rochester	Syracuse
Magazines	71	71
Newspapers	64	67
Television	48	48
Doctor	36	39
Radio	34	42
Home economics teacher	16	23
Dietitian	6	5
Clubs	5	7
Nurse	3	8

Problems in Planning, Buying, and Preparing Food

In each city, one-third of the homemakers said they had problems about "planning, buying, or fixing" food for their families. These problems were twice as common among the younger homemakers as among the older ones. By far the most common problem mentioned was that of meal-planning, i.e., "getting variety into the meals" or "planning meals to suit all of the family's needs." The next most common problem was the cost of food, followed closely by the problems related to motivating family members to eat various foods. A number of miscellaneous problems was listed, such as the use of left-overs and information on the freezing of foods.

In both cities, two-thirds of those who indicated that they had problems expressed a desire for help with them. The kind of help which they felt would be most useful was that related to "variety in food preparation" followed by help in budgeting. Then came requests for help in "quick menus," food habits, and special diets. It is significant that many expressed the desire for help in non-specific terms or that they wanted and needed help but didn't know what kind would be most useful.

In addition to the more general open questions on problems, certain specific questions were asked: would the homemaker like help on how to buy more economically, with the preparation of food, with using low-cost substitutes, with being sure her meals were balanced? In both cities, approximately a third desired such help; in Syracuse, with the slightly higher educational level, a somewhat greater percentage wanted help than in Rochester. In line with the responses to the general questions, greatest interest was expressed in being sure that meals are balanced and in meal-planning, followed most closely by interest in how to buy more economically.

Not only did the younger and better educated homemakers express more problems, but they had a greater desire for help. They put particular emphasis on help with meal-planning and with budgeting. There was less difference in kinds of problems

TABLE 4

Kind of information used

KIND OF INFORMATION	PERCENTAGE OF HOMEMAKERS*	
	Rochester	Syracuse
Recipes	41	39
Food preparation	19	33
Meal planning	13	19
Balanced diet; nutrition	12	15
Special diet	7	4
Health	1	7
No information	30	18

* Some homemakers reported more than one kind of information.

between educational levels. Often the better educated homemaker was more specific in terms of the type of help which would be useful to her. In recognition of problems and help needed, there seemed to be more differences in age levels than in educational levels.

Income differences were not as clear cut, though there was greater recognition of problems and more desire for help at the higher income levels. This may have been largely a reflection of the higher proportion of better educated homemakers. One outstanding point was that those at the lower income level had greatest interest in help with low-cost substitutes.

Responses on questions related to problems and help desired were remarkably similar in both cities. In the urban Virginia study (4), homemakers showed most interest in information about food and its preparation. Three-fourths wanted information, and the kind of information which they believed would be most useful was concerned with the preparation of new dishes and recipes. About half as many were interested in nutritional information or how to buy food, and only a very small percentage in basic cooking procedures. As in our study, the younger, the better educated homemaker and the ones with some knowledge of nutrition had the greatest interest in help.

Sources of Present Nutritional Information

A general question was asked: "Where have you usually gotten information about what to feed your family?" Responses are given in Table 2 in terms of the percentage of homemakers in each city who named a given source.

Here "mother or relative" stands at the head of the list in both cities. Later, specific questions were asked about whether information had been received from each of a series of sources as named. Responses to these are given in Table 3. As might be expected when a specific source was suggested, a higher percentage of homemakers said they had received information from that source. In both source inquiries, the mass media of education—magazines and newspapers—stand high in the lists. Of the professional persons inquired about, the physician was the person from whom homemakers believed they had received information. The physician has

TABLE 5

*Where homemakers "studied about what to eat"**

PLACE OF STUDY	PERCENTAGE OF HOMEMAKERS	
	Rochester	Syracuse
No study	65	61
Place of study	35	39
School	26	27
College	2	3
Red Cross	2	1
Home Bureau or 4-H	2	5
Cooking schools	2	2
Books and pamphlets	2	6
Other	2	1

* In some instances more than one place of study was given.

prestige, and these responses would lend further weight to having the physician well informed in regard to nutrition. The 5 to 7 per cent of the homemakers who received information from clubs were equally distributed over such groups as Home Bureau, P.T.A., church, social, fraternal, and sorority organizations.

Replies to the question, "What kind of information or things have you gotten which you have used?" are tabulated in Table 4.

Homemakers found the same kind of information useful which they believed would help them with their problems, although there was more mention of recipes as such than in the request for help with problems.

A higher percentage of the younger and the better educated homemakers received information from school than the older and less well educated homemakers. They also mentioned the home economics teacher more frequently. In addition, the better educated homemaker obtained information more frequently from group meetings, magazines, and newspapers. Both the younger and better educated women found meal-planning and information on balanced diet more useful than was true for the older, less well educated homemakers.

Those with higher family incomes were distinctly more interested in information on nutrition and received more of their help from teachers, magazines, and television than did homemakers with less income. This did not hold for the newspaper and radio.

Of the one-in-three homemakers who had studied foods, a far greater percentage had received their information from school and a somewhat greater percentage from magazines and newspapers, books, and bulletins than was true for homemakers who had not. They also had a distinctly greater interest in material on balanced diets, food preparation, and recipes. Teachers and magazines had been important sources of information, and the doctor had been less important than for the homemakers who had not studied.

TABLE 6

Types of breakfasts served adults

TYPE OF BREAKFAST	PERCENTAGE OF HOMES	
	Rochester	Syracuse
None	1	2
Coffee, or juice and coffee	2	2
Carbohydrate and coffee	8	4
Carbohydrate and milk*	9	9
Fruit, carbohydrate*	7	8
Fruit, carbohydrate, milk*	26	27
Fruit, egg, carbohydrate*	14	15
Fruit, egg, carbohydrate, milk*	22	21
Egg, carbohydrate*	5	6
Egg, carbohydrate, and milk*	5	5
Fruit, egg*	1	1

* Might or might not include coffee.

"Studied Foods"

A little over a third of the homemakers in both cities had "studied about what to eat"; over one-fourth had studied in school, with small percentages mentioning other places (Table 5).

These findings are similar to those reported for the urban Virginia homemakers (3), where one in three had taken classes in cooking or nutrition in school. A considerably higher ratio of the Virginia homemakers had attended nutrition classes or meetings. Newspapers and magazines were the most helpful for the dissemination of food and nutrition information and, as in this study, the younger, better educated, higher income homemakers and those who had some information on nutrition were those who made most use of these sources as well as books and pamphlets. In rural Virginia, only 17 per cent of the homemakers had attended cooking or nutrition classes in school.

Information on Eating Habits

Types of Breakfasts and Lunches. The breakfasts and lunches for adults have been discussed earlier (3). Table 6 gives a more detailed picture of the types of breakfasts used. In general, it would appear that many people eat far better breakfasts than is sometimes realized.

Breakfast Habits. In Rochester and Syracuse respectively, 83 and 81 per cent of the families reported that no one in the family usually missed breakfast. Nine per cent of the homemakers; 5 or 6 per cent of the husbands; and in 5 or 6 per cent of the households, one child or more sometimes did not eat breakfast. The most common reason for missing breakfast, reported in over half of the cases in both cities, was "can't eat in the morning." One-fifth gave "no time" as the reason; 12 to 14 per cent had no reason. Very small percentages cited such reasons as "illness," "dieting," and "habit."

Types of Milk Used. Forty per cent of the families bought at least some milk in a form other than fresh milk. Slightly more of the older homemakers used evaporated milk; slightly more of the younger homemakers used dried milk.

TABLE 7

Families having food dislikes

DISLIKED FOOD GROUP	PERCENTAGE OF FAMILIES	
	Rochester	Syracuse
None	50	56
Vegetables	30	26
Non-beef meats	10	12
Organ meats	8	7
Fish or seafood	5	6

Where Children Eat Lunch. Of the homemakers with children, 82 and 85 per cent in Syracuse and Rochester, respectively, said that at least some of their school-age children ate lunch at home; 10 and 13 per cent had at least one child who bought the planned school lunch; 18 and 15 per cent had children who carried a lunch. The school lunch was used to a larger extent by children of the middle-aged homemakers, presumably high school students; however, even in these instances, more children ate at home than took the school lunch. Since the majority of children eat at home or carry a lunch, these figures would seem to indicate the need for educational stress on the preparation of adequate home lunches or packed lunches. The educational level of the homemaker and income level of the family had little influence in either city on where the child had his lunch.

Problem Eaters. Three-fourths of the homemakers said they had no "problem eater" in their families. Of the slightly over one-fourth who did, children were mentioned most often; the husband next. Slightly fewer mentioned those who were ill or on a therapeutic diet; and 1 per cent in each city implicated the aged or the homemaker herself.

Food Dislikes

About half the homemakers mentioned foods which were seldom or never used because of dislike by some member of the family (Table 7). By far the most commonly disliked group of foods was vegetables (26 to 30 per cent), followed by non-beef meat items (10 to 12 per cent), then organ meats (7 to 8 per cent), and fish or seafood (5 to 6 per cent).

The principal disliked vegetables and the number of families mentioning them were: turnips, 44; squash, 29; spinach, 31; cabbage, 20; cauliflower, sauerkraut, and egg plant, 17 each; parsnips and Brussels sprouts, 16 each; broccoli, 15; carrots, 13; and asparagus, 9. Of the non-beef meat items, lamb was mentioned by 34; veal and pork by 23 each. Liver was the organ meat mentioned by 52, although tongue, heart, kidney, and sweetbreads were mentioned by one to four people. The numbers and rank order of each disliked item were amazingly similar in the two cities.

Single individuals listed various fruits, cereals,

and cheeses. It is significant that the nutritionally important foods, such as milk, beef, citrus fruits, breads, and many vegetables, were not mentioned as disliked by a single family. Once again, an examination of food dislikes leads one to question their significance in relation to adequacy of nutritive intake for most individuals. Many of the disliked foods are served so infrequently that their lack of use becomes of doubtful importance from a nutritional standpoint.

Attempts on the part of the homemakers to verbalize why some of the family did not like a particular food were as unproductive as most such inquiries have been in other studies. One-third in both cities gave reasons of "taste and flavor"; 40 to 44 per cent said they "just don't like it." The odor of the food was mentioned by 6 per cent in each city; bad association, texture, and color by 3 per cent each.

One-third of urban Virginia and two-thirds of rural Virginia families reported foods which they did not serve because their families did not care for them. Vegetables were the items most commonly mentioned by the rural group, including raw greens, cabbage, spinach, snapbeans, carrots, and squash named by about 10 per cent. In contrast to our findings, 8 per cent of all families mentioned milk as disliked; 6 per cent meat; and 4 per cent, butter.

Summary

Data are presented from a cross-sectional sampling composed of 645 homemakers in Rochester and Syracuse, New York.

One-third of the homemakers said they had problems which troubled them about planning, buying, or preparing food. By far the most common problem concerned meal-planning; the next most common problems related to the cost of foods and to motivating family members to eat various foods. The kinds of help most desired related to information on variety in food preparation, budgeting, quick menus, food habits, and special diets. The younger, better educated homemakers expressed more problems and had more desire for help.

The major portion of food shopping was done by the homemaker and usually only once a week. Two-thirds of these women had a specified amount they allowed themselves to spend for food each week. The mean and median food expenditure per person per day in each city was roughly one dollar. For only one-third of the homemakers would additional money to spend mean changes in the kind and quantity of food purchased, in most cases related to better quality meat or more meat.

Most homemakers did not plan meals much in advance. The younger, better educated homemakers with better incomes did more advance meal-planning.

Ninety-two per cent of the homemakers felt their families were getting all the foods they needed. The most common explanation given for failure to do so was food dislikes of individual family members.

The mass media—magazines and newspapers—were most frequently mentioned as sources of information on food and nutrition. "Mother or relative" were the persons who served most often as sources. Slightly over a third of the homemakers had studied about foods; for three-fourths of these, the study had been in schools.

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Ascorbic Acid and Dental Health

A relationship between blood ascorbic acid and the number of teeth in the aged has been demonstrated by Morgan, Gillum, and Williams. Fifty per cent of the persons with low serum ascorbic acid levels (below 50 mg. per 100 ml.) were edentulous and more than 25 per cent of this group had gingivitis. On the other hand, as serum ascorbic acid levels rose, the picture was considerably improved. Among those with levels between 50 and 109 mg. per 100 ml., only 40 per cent were edentulous, and when serum levels rose above 100 mg., the proportion fell to one-third. Also, a larger proportion *without* gingivitis was found in the group with the highest serum ascorbic acid, while the smallest percentage occurred among those with the lowest serum level.—*Abstracted from: Morgan, A. F., Gillum, H. L., and Williams, R. I.: Nutritional status of the aging. III. Serum ascorbic acid and intake.* J. Nutrition *55: 431, 1955.*

Nineteenth Century Leaders in Infant Feeding[1]

GERALDINE GRAVES GARDINER

Associate Secretary, Health and Hospital Division, Social Planning Council, St. Louis

LOOKING back one hundred and fifty years to the beginning of the nineteenth century on the changes and advances that have been made in the whole realm of infant care, we can view without undue complacency the amazing events that have occurred in the whole sphere of infant nutrition. Telescoping history, we see that obstetrics was first separated from surgery and then pediatrics from obstetrics before the art of the care and treatment of children came to be regarded in the 1860's as an independent part of medical science. But long before that, the fight against excessively high infant mortality had begun (1–4).

All branches of medical science have advanced so rapidly and with increasing acceleration during our lifetime that it is difficult to believe that as the American colonies entered the War for Independence there were almost no laws to govern who could or who could not practice medicine. Of the 3500 practitioners in the country at that time, only four hundred had received medical degrees. At the beginning of the nineteenth century, "classes were small, courses were ineffective" with the result that only thirty-four students were graduated from one well-known school in the nineteen years from 1792 to 1811 (5, 6). There were no medical libraries in this country and no medical journals were published here until the end of the eighteenth century. Thus both practitioners and students were without reference material. What communication there was for mail and ways of travel was slow. Physicians often journeyed several hundred miles to perform operations, and some patients went to Europe for treatment (7).

In addition to these handicaps, public health measures for the control of communicable diseases, sanitation, clean food and water supplies were unknown or unpracticed. The many cultural and nationality groups which came to settle this country brought with them superstitions and prejudices which encompassed the care of the new mother and infant hygiene, care, and feeding (8–11). Small wonder that the death rate among infants was not higher!

Because only a few newspapers or journals were printed at the beginning of the 1800's and few medical societies kept permanent records,[2] we know little of the work done by the leaders of that time or of their personal lives (7). Many men and women contributed to better practices of infant feeding; a few gained fame, some served with little recognition, and others remained anonymous. As we go back through the literature and the sometimes scant biographical material, we find mention of the same names again and again. As Ralph Waldo Emerson has so tersely stated (14): "All history resolves itself very easily into the biography of a few stout and earnest persons." What do we know of these people who prepared the way for others? Events in the lives of a small number have been chosen to represent different periods of time in the last century.

Early Leaders in America

It was not uncommon for a young man, after two years of college, to receive his medical degree after one more year of study. Observing a definite discrimination in favor of those who had studied in Europe, many of them, wishing either to make a better living or become a better practitioner, bravely set out to study abroad. Those who were unable to manage this expensive education but whose intent was serious, indentured themselves to physicians of reputation, serving out a number of years as apprentices or preceptors before starting out for themselves (6).

[1] Fourth Lydia J. Roberts Award Essay, read at the 38th Annual Meeting of The American Dietetic Association in St. Louis on October 20, 1955. This Award is made possible by a grant from Gerber Products Company, Fremont, Michigan, for the purpose of encouraging historical study of nutrition. Presentation of the Award was made at the Annual Banquet of the Association on October 21, 1955 by Ethel Austin Martin (see JOURNAL, page 1240, December 1955).

[2] Early proceedings were: the *Philadelphia Journal of the Medical and Physical Sciences* (12) and the *Boston Medical and Surgical Journal* (13).

WILLIAM POTTS DEWEES

One of these was William Potts Dewees, born in 1768 in Pottsgrove, Pennsylvania, who knew from an early age that he wanted to study medicine (15, 16). While still young, Dewees lost his father who had made arrangements before his death to place his son with a practicing apothecary. Little distinction was made in those days between the work of an apothecary or a physician, so this plan was considered satisfactory by Dewees who had been left without property or money to continue his education. He stayed for several years, leaving to pursue his studies under Dr. William Smith, a well-known physician in Philadelphia, and to attend lectures at the University of Pennsylvania. After three years of this training, at the age of twenty-one, Dewees followed the common and approved custom of setting out to practice medicine without a formal diploma. This was the year 1789. Because of his extremely youthful appearance, at first he found people reluctant to call him, but his ability was soon recognized not only by his grateful patients but by leaders in the field of medicine as well (15–18).

Obstetrics was an obscure science in America, for training did not exist; midwives performed the service, as it was thought no instruction or examination of patients was needed (18). Arming himself against the ignorance and prejudice in the community and the profession, Dewees began to increase his knowledge and experience until he became "so famous that no lady considered herself safe in other hands, and patients it was said, postponed their confinements until he was at leisure" (17)! It is estimated that he delivered at least ten thousand women during his active professional life. In 1806, he applied to the University of Pennsylvania for a degree of doctor of medicine by submitting a thesis on moderation and relief of pain during delivery, but it was not until 1825 when he was fifty-seven years old that he was elected as an Adjunct Professor of Obstetrics at the University, having to wait and watch as others received their appointments before he did (15, 16).

In 1825, also, the first edition of *A Treatise on the Physical and Medical Treatment of Children* (19) appeared which was to become so popular that it continued to be published after his death in 1841. In it, he discussed at length the three ways the infant might be fed, strongly recommending that the proper nourishment for the child was its mother's milk. For the mother without a sufficient or healthy supply of breast milk, he listed a choice of three methods of feeding in this order: "1st, where the mother may continue to suckle her child, aided by artificial means; 2d, where she is obligated to have recourse to artificial means entirely; 3d, a wet nurse." When a mother was unable to nurse her child, he recommended a feeding made of two-thirds milk and one-third water to which a small amount of loaf sugar was added. He emphasized that only fresh milk should be used and that it should come from *one* cow.

In the second period of feeding the infant, Dewees discussed weaning, emphasizing the propriety of the time this should take place. He stressed that weaning should not be destructive or injurious to the child or to the mother. The circumstances depended on the mother and her supply of milk, the child (the state of its teeth and the state of its health), and the time of year.

Dewees was insistent that a child's ability to eat solid food depended on more than its age (19):

> It would seem, then, that a child is capable of preparing its more solid food, in proportion to the number of teeth it may have cut; and that, precisely at the period at which they make their appearance. Therefore, the number of teeth more certainly points out the powers of the stomach, than the period of the child's life at which they may show themselves . . .
>
> From these observations it will be evident, that the rule founded exclusively upon the age of the child must be of very doubtful application, if not injurious to its observance, since it may sever a child from the breast at a time when its stomach is ill qualified to provide for the contingencies of the system. We should, therefore, say that the presence of teeth is absolutely necessary to the success of weaning, let the age of the child be what it may; and, consequently, that this should never be undertaken until several are cut.

This discussion on the relationship of weaning to the child's health sounds over-simplified today as Dewees warned against removing the child from the breast if he had been "much reduced by previous illness, or labouring under actual disease." The same is true of the advice given for the months to avoid weaning, namely, July, August, and September, because of the diseases arising or present especially during the hottest months of the year. Obvious as this appears to us today, many more infants might have lived if such advice had been more widely followed.

During Dewees' lifetime and because of his outstanding work, midwifery came to be held as an art and a science (20). His fame was not limited to this country alone, for his writings and knowledge made him well known and respected abroad so that he was quoted widely—in fact, more than any other American physician. In a memorial service in 1842 a year after Dewees' death, Hugh L. Hodge (15), who replaced him as Professor of Midwifery at the University of Pennsylvania, said, "To him we are indebted simply for fixing attention on the physical management of children, independently of the high value of the directions; for prior to this period, the profession in this country left the details almost exclusively in the hands of nurses and midwives, with all their tormenting ignorance and officiousness." Although acclaimed and respected on both

continents, Dewees was disliked personally by many for he was prejudiced and opinionated. He was often sharp spoken when his word was questioned and sarcastic in manner. Dewees was ill in his later years and when he died in 1841 at the age of seventy-three, he was a poor man and mentally incapacitated (21, 22).

THE THREE MEIGS

One of the most interesting families to be associated with the field of child care and more specifically with that of infant feeding were the three doctors Meigs—father, son, and grandson. The practice of these three men was to span almost a hundred years from 1817 to 1912 (23).

Charles Delucena Meigs was born in 1792 on the Island of Bermuda, the fifth of ten children, and lived there until his family moved to New Haven, Connecticut. His father was a professor of mathematics at Yale College and later became President of the University of Georgia, where Charles graduated in 1809 when he was only seventeen years old. As a boy he learned French from a cultured friend, and he was to find the language useful in his professional life. This man also taught Meigs the courteous and beautiful manners for which he was known during his whole career. Immediately on finishing college, he apprenticed himself to Dr. Thomas Hanson Marshall Fendell of Augusta. After three years, he left to study medicine at the University of Pennsylvania where he received his degree in 1817 after intermittent study (16, 24).

During the years he studied at the University, Meigs met and married in 1815 a girl from a prominent Philadelphia family. Although he established an office in Georgia, they returned to Philadelphia after several years, since his wife was not sympathetic to slavery in the South, and he was troubled with his health. Back in Philadelphia, his practice grew, and Meigs became known as a dramatic lecturer in his chosen field of obstetrics. He was elected Professor at the University of Pennsylvania in 1841, retiring by his own choice in 1861. He died in 1869 when he was seventy-seven years old. Meigs believed that indigestion in artificially fed infants was due to the large quantity of casein in cow's milk. Later, half of this theory was substantiated when it was found that cow's milk contains more casein than breast milk. Although it has been disproved that the milk protein is indigestible, this was one of the first scientific attempts to explain the intestinal disturbances in infants (25, 26).

The third of Charles D. Meigs' ten children, John Forsyth, was born in 1818 and grew up to become a physician like his father. He was serious and quiet as a child and at sixteen began to study medicine, graduating from the University of Pennsylvania in 1838 before he reached his twentieth birthday. He spent several years as a resident physician at Pennsylvania Hospital before going to Paris for further study, returning to enter practice with his father. He, too, taught obstetrics, later devoting his time to diseases of children. Those who knew John Forsyth Meigs characterized him as a modest man, always correct and always the gentleman, loved by his patients, respected as a diagnostician and physician by his associates. He died in 1882, when he was sixty-four years of age, after he had been ill with pneumonia for only a short time (24, 27).

In his extensive pediatric practice, John Forsyth Meigs had found that certain proportions of milk, cream, and milk-sugar agreed better with infants, since it seemed to be more suitable for their digestion and nutrition than any other he had used. He encouraged his son, Arthur Vincent Meigs, to make a chemical analysis of one mixture for he wanted to know if it compared favorably with that of mother's milk. The formula came to be known as "Meigs Mixture" (28) and was later perfected by his son, the third Meigs. Of historical interest also are other views held by John Forsyth Meigs. He maintained that the more simply feedings could be prepared in large institutions, the safer for infants they would be and suggested that the water be added in the correct proportion, dependent on the age of the infant. He believed infants should be fed every 2 hr. in the first and second month of life, every 3 hr. from the third to the sixth month; he was against the feeding of children at night after they had reached eight months of age (29).

In 1848 he completed his book *A Practical Treatise on the Diseases of Children* (29), and it quickly was accepted as a text and reference in this country and in England (24). For the fourth edition in 1869, he collaborated with Dr. William Pepper (30) and, according to Osler, this edition was almost a new book and the credit for the clinical additions should be given to Pepper (31, 32).

Arthur Vincent Meigs, one of the six children of John Forsyth Meigs and grandson of Charles Delucena Meigs, was born in Philadelphia in 1850. His father was impatient to have him begin his medical education and removed him from college during his second year. He was not eligible to receive his medical degree since he graduated before he was twenty-one years old and had to wait several months before receiving it. He studied abroad, returning to become a resident physician at the same hospital as his father, and in 1874 began his practice of medicine which was to continue thirty-eight years until his death (33).

To most of the men practicing at the same time, milk was milk, but Arthur Vincent Meigs knew there must be a chemical difference, if infants would thrive on breast milk but often sicken or die if fed cow's milk. In 1885, he published a little book of 102 pages, *Milk Analysis and Infant Feeding* (34), which is considered a most outstanding contribution

to pediatrics in that it is the foundation for modern infant feeding. Although results of his chemical analysis of cow's and human milk contained in this book were found to be fundamentally correct (35) and have continued to be the basis of infant feeding, he himself attached less importance to his study in this area than to his work in anatomy. He did, however, say he would be thankful if his work in feeding contributed toward saving human life (33).

In *Milk Analysis and Infant Feeding* these directions are given for preparing the artificial feeding:

> A milkman must be found who will serve good milk and cream, fresh every day. By good milk is meant ordinary milk, such as is easily procured in most cities, and not rich Jersey milk; and in the same way the cream should be such as is ordinarily used in tea and coffee and not the very rich cream of fancy cattle. The reason that ordinary milk and cream are recommended is because they are within the reach of almost every one, and not because they are any better than the rich milk of high-bred stock. If Jersey milk is to be used, it would be necessary to analyze specimens and then make the necessary calculations as to how to dilute it to obtain the desired relative proportions of the proximate principles. When the child is to be fed, the nurse should mix together two (2) tablespoons of cream, one (1) of milk, two (2) of lime-water and three (3) of sugar-water, then, as soon as the mixture has been warmed, it may be poured into a bottle, and the food is ready for use. If the infant is healthy, this quantity will not satisfy it after the first few weeks, and then double the quantity must be prepared at each feeding.

Arthur Vincent Meigs was a refined and cultured gentleman, considerate and sympathetic with his patients. An overly conservative practitioner, admired for his clinical ability, he nevertheless refused to accept the discoveries of bacteriology and fought the germ theory of disease until his death in 1912 (36).

Last Half of Century in America

ABRAHAM JACOBI

Eight years before the War Between the States began, a man who was to exert the greatest influence on American pediatrics and to advocate simple and common-sense theories on infant feeding arrived to practice in New York City. He was Abraham Jacobi, a German refugee fleeing poverty and detention for revolutionary activities in his fight for liberalism during the troubled times in Cologne (37). Fifty years later, when he was honored on the occasion of his seventieth birthday in 1900 with a *Festschrift*,[3] Sir William Osler (39) referred to his study of infant feeding as the most important part of his lifetime of work saying: "It may be said that the safety of a nation depends on the care of its infants, and no one in this century has done so much for their bodily needs as Dr. Jacobi."

Abraham Jacobi was born in 1830 in Westphalia in northern Germany, (40, 41), graduated in medicine from the University of Bonn when he was twenty-one. He came to the United States, escaping first to England as an exile from his native country, landing in Boston after a forty-three-day voyage, and later moving to New York City. Professional fees were small in the tenement area where he first practiced—25 cents for office visits, 50 cents for home calls, and $5 to $10 for obstetrical cases (42). In this year of 1853 he found medical education undeveloped with little or no specialization being practiced. Little scientific attention was given in the medical schools to the diseases of children or to their feeding. What was attempted and taught was included either along with that of the diseases of women or internal medicine. As a result, physicians went out to practice with little knowledge of how to care for either well or sick children. Added to this was the common unconcern shown by both doctors and the general public over the number of babies who died. A first important step, however, was taken in 1860, seven years after Dr. Jacobi came to the United States when the New York Medical College appointed him Professor of Infant Pathology and Therapeutics, making him the first man to occupy a chair in pediatrics in America (43–45).

We know that Jacobi was a small man whose lionine head was covered with windblown hair, his short stature the result of having had rickets as a child. His character was unimpeachable; he was incorruptible, a great physician and an honest one, never hesitating to take a stand on what he considered right. Possibly no other physician in America has been as honored by as many societies and hospitals or received as many distinctions as Dr. Jacobi. He was elected the first President of the American Pediatric Society on its formation in 1888 and was the first foreign-born President of the American Medical Association. In spite of all this, he remained a modest man who was never overcome by the applause he received. Small wonder he came to be known here and abroad as "The Father of Pediatrics in America" (46–48). At dedication exercises in 1936, seventeen years after Jacobi's death, one of his oldest friends, Dr. Isaac Abt of Chicago (43), stated: "It has been said of much of Jacobi's work, especially that pertaining to the feeding of infants, that it was advanced in character."

In 1873, Jacobi married Dr. Mary C. Putnam, daughter of publisher G. P. Putnam of New York. She, too, was a physician who had trained both in this country and in France and was one of the first

[3] We have no word in the English language to convey the same idea as the German *Festschrift*—a volume of essays written by former pupils and professional friends on the branch of medicine to which the honored person has dedicated his life. By custom, it is usually presented at the twenty-fifth or fiftieth year of professorship or (as with Jacobi) in commemoration of the person's seventieth birthday (38).

American women to practice medicine (48). In 1885, Dr. Mary Putnam Jacobi edited one of her husband's early books, *Infant Diet*, which became part of the Putnam's Handy Book Series of Things Worth Knowing (49), written for popular use. Jacobi was a prolific writer whose work included essays, books, addresses, lectures, and scientific papers. Pointing out the fallacy of increasing the percentage of fat in artificial feeding in "The Gospel of Top Milk," he (50) summarizes this otherwise scientific dissertation by stating his stand in forceful everyday words:

> Artificial food is not equivalent to woman's milk. Cow's milk cannot be changed into woman's milk. The efficiency of all alleged improvements in artificial feeding is liable to be overestimated, and not always received with sound criticism. The advice to add cow's milk fat to cow's milk in order to make it more nutritious or to make its casein more digestible, is dangerous . . .
>
> Cereal decoctions improve the nutrient value and the digestibility of a milk mixture.
>
> If ever the baby, while feeling well, does not increase in weight, the intelligent practitioner may be obliged to add carefully and slowly to the caloric value or general nutritiousness of the food mixture by increasing either the cereal decoction or the fat percentage. Feeding cannot be regulated by mathematics so well as by brains, and by the wants of the individual baby.
>
> The top milk gospel is heresy.

Jacobi, as many others, was adamant that mother's milk was the best possible food for infants. As early as 1877, he realized the advantage of boiling milk and stressed its use for artificial feeding; "heat the milk until you see the bubbles" (47) was memorized by native and foreign-born mothers all over America. He advocated that by the simple step of improving the diet of infants, intestinal disorders could be reduced and, as a result, excessive mortality would drop (51–54). Through his interest and largely because of his efforts, pediatrics came into being as a separate and important branch of medical teaching and practice. As a natural result, more and more scientific and clinical studies in nutrition and research in growth and development of children followed. Unlike many who by death are denied the knowledge of the value or acceptance of their ideas, Jacobi lived to see the effect of his work when the infant death rate dramatically declined. Abraham Jacobi was active until a few days before his death in 1919 ending sixty-six years of practice, study, and teaching in his adopted country (55–59).

THOMAS MORGAN ROTCH

The man who said, "Although in a certain number of instances it has been found that infants in the early months of life can digest and thrive on whole milk without any modification of the various elements of milk, yet in so many cases this modification has been found necessary that it has assumed an important role in our practice," was Thomas Morgan Rotch of Boston who introduced percentage feeding (46).

The work that Arthur Vincent Meigs had begun in the modification of cow's milk for infant food was carried on by Rotch; however, he objected to the amount of lime-water Meigs had later used, saying that the taste of lime-water was very noticeable and objectionable to both the infant and in turn therefore to its parents. He advocated using a smaller (one-sixteenth in place of one-fourth) amount which resulted in a mixture with a taste strikingly similar to woman's milk (60). To Rotch goes the credit for developing the system of percentage feeding and having it accepted for popular use. Realizing that high infant mortality was due to a great extent to faulty nutrition, he set out to find a clean, safe formula that would be as much like mother's milk as possible (61). But he found that one formula was not suited to all infants in need of artificial food, even though they were the same age. Because of this, he developed a system of prescribing formulas to include the desired percentage of each food element (62); however, the system was most complicated and many physicians were even more bewildered.

To solve this mathematical dilemma and put his system into practical use, the Walker-Gordon Laboratory was established in Boston to produce and use certified milk in making the formulas. This milk laboratory, the first in America, made it possible for physicians to send their prescriptions for an infant's food giving the number of feedings desired (63) and the amount of food for each; the formula would be prepared for delivery according to the percentage of food elements needed. Branches of the laboratory were opened in other large cities of the East and Middle West, when their use became known and their value established. It is interesting that in the early days of percentage feeding, the casein in cow's milk was the main point of discussion and concern. Later, when it was proved that the *common curds* in infants stools were fatty, rather than the suspected protein, the necessary modification was made in the amount of cream added to the feeding.

Rotch was born in Philadelphia in 1849 and received his medical degree from Harvard University in 1874. After interning at Massachusetts General Hospital, he studied abroad for two years in Vienna, Berlin, and Heidelberg, before setting up his practice in Boston, specializing in that branch of medicine where the death rate was the highest (64). Only four years after graduation he was teaching pediatrics at Harvard Medical School, and because of the excellence of his lectures, in 1893 received the first appointment of Professor of Diseases of Children. It was through his excellent teaching in the classroom, clinic, and hospital that a definite place was made in the curriculum of the medical school

and a separate department was created for pediatrics (65, 66).

One of the first in Boston, if not the very first, to limit his practice exclusively to pediatrics, Rotch influenced the profession as teacher and writer, always working for the welfare of children. He is remembered as a generous, untiring man of strong convictions who could not be lukewarm on any matter, as well as a most competent executive with an unusual talent for organization. His greatness, won by plain hard work, earned him the title "The Father of Pediatrics in New England."

Rotch's last years were unhappy because of the hopeless illness of his wife and the death of his only son. He died a poor man in 1914, not living to see the completion of the new Infant's Hospital built on the grounds of the Harvard Medical School. This memorial to his son was in large part made possible by money donated by Rotch's friends (42, 67, 68). The accomplishments of men like Rotch were responsible for beginning the change in students going abroad for their training, as the quality and reputation of medical education and practice in this country rose to surpass the European institutions. In paying tribute to Rotch, Jacobi (69) said to members of the American Pediatrics Society: "I wish my American colleagues would soon appreciate the fact that the young men you send to European centers to learn medical science and morals, find their goal more often after their return, when they meet the good and great men represented in this and other scientific bodies."

THREE OUTSTANDING MEN

There were others in the latter part of the nineteenth century whose influence was widely felt. There was Henry Dwight Chapin (1857–1942) of Ohio who advocated, as did Jacobi, the addition of cereal gruels to help in the mechanical digestion of casein curds. His belief that human milk could not be exactly duplicated and his use of a simple method of modification of cow's milk were in opposition to the views held by Rotch whose "percentage feeding" was based on the principle of a formula as nearly like mother's milk as possible (70). Because of his interest in child welfare, Chapin set up the Speedwell Society to care for infants in supervised foster homes where they could be medically supervised. This was a result of his efforts to have infants discharged earlier from hospitals so that their recovery could be hastened (42, 71).

John Marie Keating (1852–1893) (42) received his degree from the University of Pennsylvania and in 1889 edited the first cooperative work in the field of pediatrics in the United States—the five volume *Cyclopaedia of the Diseases of Children* (72). Contributors included Rotch, Jacobi, Pepper, Holt, and others who were among the best informed men of the time. Keating's *Cyclopaedia* was regarded as an outstanding contribution to pediatric literature, and his death at only forty-one years of age was a great loss to the field (73).

Few pediatricians were as well known as or more highly respected than Luther Emmett Holt, born in Webster, New York, in 1855, and graduated from the College of Physicians and Surgeons in New York. He was an untiring man who became known for his clinical work and laboratory investigations. Although a very reserved person, except with those he knew well, he was considered the best of teachers and a joy to his students because his lectures were clear, thorough, simply given, meticulously accurate. The same can be said for his book with which his name is so closely associated (42, 55, 74). *The Diseases of Infancy and Childhood* (75) first appeared in 1897 and was immediately hailed as the most complete volume on the subject. In the preface to the first edition, written the previous year, he said: "The arrangement of the book differs somewhat from that of other works on the subject. The space given to nutrition, to its derangements, and to the diseases resulting therefrom, is, I think not out of proportion to their importance." In Holt's opinion infant hygiene and infant feeding were the most important aspects of pediatrics, and in 1894 he published a small book *The Care and Feeding of Infants* (76), one of the first books written especially for mothers. Of historical interest is his chance meeting with John D. Rockefeller, Jr., on a railroad trip and their conversation which resulted in the formation of the Rockefeller Institute dedicated to research. Holt died just before his sixty-ninth birthday, January 14, 1924 in Peking, China where he had gone the year before as Visiting Professor of Pediatrics at Union Medical College (77).

European Leaders in Infant Feeding

During the first half of the nineteenth century, clinical medicine and surgery had developed in France; in the latter half, Germany was to recover from the Napoleonic wars and do much of the fundamental work in physiology, pathology, and chemistry (78). Research in the chemistry of food and its application to everyday living was beginning to catch the interest of inquiring men in both countries.

Two versatile men were born in France at the beginning of the nineteenth century who were to make early contributions to the field of medical science, particularly that of infant feeding. Both were to live to fulfill the biblical prediction of three score years and ten (Psalms 90). Alphonse Donné (1801–1878) was born in Paris and graduated in medicine in 1831 à Paris. He combined practice with clinical laboratory work in microscopy and chemistry and was the first to see the blood platelets. In recognition for this scientific work and for analyzing, weighing, and tasting the milk of a wet nurse (du comte de Paris) he was made a chevalier

of the Legion of Honor. His books concerning lactation and the care of young infants were illustrated with daguerreotypes and translated into German and Italian (79, 80).

Eugene B. Bouchut (1818–1891) who graduated in medicine à Paris in 1841 is remembered for his diversity of scientific interests. He was one of the first to study nervous diseases in infants, did research on infant mortality, pioneered in the treatment of lung abscess and empyema, published a book that became a text in pediatrics. Although *Traité Pratique des Maladies Des Nouveaux Nés, des Infants à la Mamelle* (81) is devoted mainly to the diagnosis and treatment of children's diseases, it contains drawings of bottles with screw-type nipples, instructions for artificially feeding infants, and the physical properties and chemical composition of *du lait de femme* (human milk).

In the latter half of the nineteenth century Pierre Constant Budin (1846–1907) was a professor of obstetrics when he established a consultation service for the mothers of infants at La Charité in Paris (80). He had noticed that babies were often poorly nourished on leaving the maternity hospital where they had been born. Mothers could bring their infants to his clinic, have them weighed and examined, and be given help with their diet and care. For artificially fed infants, Budin recommended undiluted cow's milk in the amount of one-tenth of the child's weight (37, 82).

At about this same time, Gaston Variot (1855–1930) encountered a somewhat different problem requiring a different solution. His concern over the care of infants of working mothers led him to find a safe way of artificially feeding those infants. He did this by making pasteurized milk available in sterilized bottles. He was successful in helping to lower the infant death rate by stressing three simple principles: (a) mothers should breast feed their infants whenever possible and safe; (b) clean milk should be available when artificial feeding was necessary; and (c) mothers should be educated in the hygiene of their children. Variot's name stands as an early landmark in the child welfare movement which did not gain momentum until the twentieth century (80).

The first man to investigate the chemical differences of cow's and human milk was Johann Franz Simon (1807–1843) of Berlin, who found that the casein was higher and the sugar lower in cow's than in human milk. Although his work went unnoticed for years, it is considered the first basic principle which was to be the forerunner of the study of scientific infant feeding (37, 80).

Later, Philipp Biedert (1847–1916), one of the founders of the German Society of Pediatrics, was to continue this work and his thesis on graduating in medicine in 1869 from the University of Giessen was on the chemical difference in the two milks, his first of a series on this subject. He laid the blame on the indigestibility of cow's milk to its higher percentage of casein and to its formation of a harder curd. By adding cream and sugar to cow's milk he tried to make a modified mixture that would be much like human milk. Biedert's opinions on these points were held by others for some time, and although the years have proved some of his theories incorrect, he is remembered for his pioneering work and the influence he exerted in gaining the clinical acceptance of his laboratory work (37, 82, 83).

At the very close of the nineteenth century, Johann Otto Leonhardt Heubner (1843–1926) and Max Rubner (1854–1932), both graduates from Leipzig (83, 84), published the results of their work on the caloric requirements of infants. Their findings that infants under six months of age need 100 calories per kilogram body weight every 24 hr. have been tested and confirmed by other research workers. Their important studies in the daily food (energy) requirement set the stage for the modern work in infant metabolism (37, 80, 82).

Summary

These were some of the determined men who devoted their time and brilliance to the unfolding science of infant feeding. Disciples were many but great leaders were few. We find some historians have attempted to rate, but wise ones neither make comparisons between the achievements and discoveries nor do they point out one decade as more important than another (78).

As the ninteteenth century closed, greater application was being made of the proved advances in infant feeding so that more and more infants received the benefits (85, 86). Along with this came the fuller realization that today's babies are tomorrow's citizens and the greatest asset to any country's future (87). Acceptance of such ideals helped to emphasize the need of further reducing the death rate. Absence of vital statistics for the nineteenth century makes it almost impossible to compare death rates of the same age groups. Although the death rate of infants in 1900 (162.4 deaths under one year per 1000 population of that age group) seems high to us now (88), it represents an important step toward eliminating needless waste of human lives. In London during the period from 1790 to 1809, 41.3 per cent of children under five years of age died (89), which shows that the problem was being challenged. Factors in this achievement were the application of the principles of nutrition and the sterilization of food (90–92).

Often only silent acknowledgement was given to those who made it possible. Although the world was to wait for the answers to some of its questions, research in the chemistry of food and its application to everyday living was beginning to catch the interest of more inquiring men (93). It would be some years

before we understood the mysteries of the vitamins and would be able to conquer the deficiency diseases (94). Outstanding leaders were laying strong foundations toward accomplishments in the health and well-being of children (95), but it was not until the twentieth century that the science of preventive medicine began to operate in their behalf (96).

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Taste Testing Frozen Meat Cooked Before and After Thawing[1]

LENDAL H. KOTSCHEVAR, Ph.D.

Director, Residences and Food Services, and Chairman, Home Economics Department, Montana State University, Missoula

IN THE course of an investigation to detect differences in frozen meat cooked before and after thawing (1), one part of the research involved a study of taste difference and preference. In this connection, it was necessary to select appropriate methods and expert judges for taste testing.

Broadly speaking, taste testing may be divided into two types—discrimination and preference. Preference—or acceptance—testing of food is, of course, the acid test from the practical point of view of the dietitian. Discrimination, or difference testing, however, also has implications in food administration, as well as in the food processing industry where it is most commonly used. Differences in taste due to length of storage of frozen food, for instance, can determine the size of purchasing orders and inventory practices. Ability to detect differences between so-called "identical" products would, of course, be of value in establishing purchasing specifications. In altering standardized recipes, when substitute ingredients are being considered, a detectable difference in an already acceptable product may be important.

Four methods for discrimination testing which approach the goal of objectivity, reliability, and ready adaptability to quantitative treatment have thus far been used. These are termed: single stimulus, paired stimulus, duo-trio, and triangle. They have been described by Pfaffmann (2) and Peryam and Swartz (3). The latter workers have also used a fifth method, the dual-standard test, which is adapted to use with odor samples. The triangle test, used in this investigation, was worked out both in this country by Scofield (4) and by Helm and co-workers in Denmark (5, 6).

This paper will consider only the triangular test and the duo-trio test in its discussion.

[1] Based on a thesis submitted in partial fulfillment of the requirements for the Doctor of Philosophy degree, Columbia University. This research was supported by a grant from *House Beautiful* magazine. Received for publication February 2, 1956.

Procedures

SELECTION OF THE PANEL

The judges chosen to form this "expert" panel qualified for membership by passing two tests, the second being more selective than the first.

A total of 106 applicants were obtained from the faculty, students, and employees of Teachers College, Columbia University. All were given an "identification" test, which called for recognition of four chemically pure, but extremely weak solutions of bitter, salty, sour, and sweet.[2] If a candidate correctly identified the four solutions, he was then allowed to take a second test; if he failed, he was dropped from further consideration. Of the original 106 applicants, 26 passed the first test.

The second, or elimination test was designed to determine the applicant's ability to distinguish four degrees of strength in salty, sour, and sweet solutions. Bitter solutions were not used in this series, because taste buds become fatigued so quickly with the stronger bitter solutions that discriminating selection becomes impossible.

Scorings for the elimination test were compared by calculating the rank order correlation coefficient for each solution. The ten candidates having the highest mean rank correlation scores were selected as the "expert" judges for the final panel.

Because taste acuity of an individual may vary from day to day, or even from hour to hour, due to fatigue, worry, lack of appetite, or other factors, a check test was administered at each testing session to determine whether a judge's taste perception was high at a given moment. This test was simply a repetition of the first identification test, now renamed the "check" test. It was not scored when given, but was graded later after the tasting session was finished. If a judge's check test indicated a low taste threshold for that time, his scores were discarded in the final tabulation of the data.

An opportunity to check further the methods used in choosing persons of high taste perception and in eliminating those who had temporarily lost their

[2] Details of preparation of taste solutions are presented in the unabridged thesis (7) from which this paper is taken.

taste acuity also developed when it was learned that nine of the unsuccessful applicants in the second or elimination test were especially interested in the study. It was therefore decided to permit them to stay on the panel as "non-judges," participating in all phases of the taste testing exactly as did the ten experts. By comparing their scores with those of the experts, a check on the efficiency of the selection methods was thus possible.

TASTING PROCEDURES

The triangular test, primarily a discrimination test, was used in this study, modified to include also preference indications. Taste tests of nine different meat cuts were made. For each test, three samples were tasted. Two of these were identical, while the third was different. The judges were asked to taste the meat and record which two of the three samples were identical in their opinion.

The judge thus had one chance out of three of making a correct selection. If he were able to detect a difference in flavor of the two types of samples presented, he would, then, without difficulty, have paired correctly the two samples which were identical.

If a number of the judges were able to identify correctly the two identical samples, the number of correct pairings which would have resulted would have been greater than could occur by chance. In this way, it was possible to determine statistically whether the panel members were actually able to distinguish the difference between the two types of samples.

In addition to requesting the judges to identify what they considered like samples, they were also asked which sample or samples they preferred. If a judge preferred two samples (which he might, if he felt they were like samples), he was allowed to put both down as a preference. If, in naming two samples, the preferred two samples were not identical, i.e., if he selected two samples which were not pair mates, then his selection was labeled "no preference" and omitted from consideration. But, if he chose two samples which were pair mates, the preference was listed under the respective heading of "meat cooked unthawed" or "meat cooked thawed," depending on his choice. If a judge failed to pass his check test prior to a panel meeting, his preference was not included.

STATISTICAL TREATMENT

Judges' scores, both for discrimination and preference, were analyzed statistically. In calculating the significance of the discrimination tests, two statistical analyses were made:

(a) Each of the nine tests was considered a separate test and the significance of the right and wrong pairings for each test was calculated by binomial expansion using the formula $(\frac{1}{3}-\frac{2}{3})^r$, where r is the number of judges whose scores were used. The result was a statistic which indicated the probability of obtaining by chance the number of correct pairings achieved in that specific test.

(b) The results of the nine individual tests were pooled, and the entire experiment was treated as one test. The method suggested by Wallis (8) for pooling data and testing for significance by calculating a Chi-square was used.[3]

For both procedures, the 0.05 level of significance was adopted.

In examining the preference scores, significance was determined by a Chi-square at the 0.05 level.

PREPARATION OF SAMPLES

Meat Cuts. This study was concerned primarily with the effect of different ways of handling frozen meat prior to cooking, i.e., whether differences were detectable between samples cooked in the frozen state and those which are thawed prior to cooking. To this end, nine cuts of meat which had been frozen were studied: beef pot roast, grilled calves' liver, braised short ribs, grilled pork chops, pork roast, lamb stew, lamb roast, rib steaks, and rib roast of beef.[4]

Paired mates of each cut were frozen, so that one mate of each pair could be thawed before cooking and the other cooked without prior thawing. Then, after cooking, for each triangular test, two samples were selected at random either from the meat thawed before cooking or from that thawed while cooking. Once the paired samples were chosen, the selection of the third remaining sample was fixed and came from the other paired mate.

The prime ribs, short ribs, rib steaks, and pot roast were all cut from untrimmed, paired wholesale cuts of primal ribs of beef, U. S. Choice. The short ribs were cut from the ribs about 7 in. from the lower edges of the vertebrae. They were then sawed into 2-in. segments and divided into separate rib pieces. The pairs, one from each paired side, were placed in polyethylene bags, labeled, and frozen.

The remaining prime ribs provided: the steaks, $\frac{7}{8}$ in. thick; the pot roasts (shoulder-end of the rib, 3 in. in width); and the standing rib roasts, all of which were weighed, wrapped, labeled, and frozen.

The lamb was cut from one hind saddle. Frenched lamb roasts were first cut, weighed, wrapped, labeled, and frozen. The scrap meat obtained from the Frenching and the flank was diced into $\frac{1}{2}$-in. cubes for stew and frozen, care being taken that the stew pieces from the right and left sides were not mixed.

Two paired trimmed loins of pork were obtained, from which ten pork chops $\frac{1}{2}$ to $\frac{5}{8}$ in. thick were

[3] Formula used was: $-2\sum_{i=1}^{h} \log_e P_i$ = Chi-square with 2 degrees of freedom.

[4] Swift & Co. donated these cuts of meat.

taken from each rib end section. Rib bones were removed, the chops weighed, wrapped individually, labeled as to which paired rib section they were from and exact location on the rib section, and frozen. The remaining loins were used for the roasts.

One calf's liver provided cuts for the study. It was divided longitudinally into right and left sections and then cut into ⅜-in. slices. Slices from each section were considered as paired cuts. Each slice was weighed, wrapped in aluminum foil, labeled as to location and paired section, and frozen.

Defrosting. Only one mate of a pair was thawed before cooking. All cuts to be thawed were removed from frozen storage, unwrapped, and thawed in a home-type refrigerator at a temperature between 35° and 38°F., after having been placed in funnels covered with moisture-vaporproof wraps.

Steaks, chops, and liver slices were removed from the freezer 24 hr. before cooking, while the time of removal of roasts varied with the size of the roast. No thawed meat was cooked until the center of the meat reached a temperature above 34°F.

Cooking. Comparable cuts were all cooked by the same method, the only variation being the treatment prior to cooking, i.e., thawing or no thawing, and the cooking time which was adjusted so that samples of the same cut were done at the same time. All meat was lightly salted before cooking.

Roasts were cooked in open pans, the beef and lamb roasts at 300°F., the pork at 345°F. The lamb roast was considered done when it reached an internal temperature of 172°F., the beef roasts at 142°F., and the pork roasts at 185°F.

The steaks and chops were pan broiled, and the liver slices were pan fried after being lightly floured.

The pot roasts were cooked in separate Dutch ovens, after browning. Three-fourths cup boiling water was added and the roasts allowed to braise at a temperature held as closely as possible to 190°F. They were considered done when an internal temperature of 180°F. was reached.

Short ribs were also cooked by braising.

In cooking the lamb stew, the cubes of lamb, either thawed or frozen, were dropped simultaneously into two pans in which 1 cup boiling water had been added. The frozen sample was brought to a boil as quickly as possible, while the flame under the thawed sample was controlled so that it came to a boil at approximately the same time. The temperature was then allowed to drop to 185°F. for the remainder of the cooking time. The stew was cooked to a well-done, tender stage, judged by piercing with a fork.

Sampling. Roasts were sliced about 1/16 in. thick, and samples weighing about 5 gm. were presented to the judges. Chops, steaks, and liver were cut into 1-in. square samples. About 1 Tbsp. lamb stew was given per sample, and one rib segment of braised short ribs constituted a tasting sample.

The identical pairs and odd samples in each instance were chosen at random.

Since all samples had been carefully labeled prior to freezing, it was possible to serve each judge paired samples as desired. For instance, if two samples were taken from Steak No. 1 from the right side of the animal, then the odd sample came from Steak No. 1 from the left side. Or, if a judge received an odd sample from a slice of roast from the loin end, then the other two samples were from exactly the same spot of the loin of the paired mate. Thus variation because of area differences between paired mates was reduced.

An attempt was made, of course, to eliminate differences in the appearance of samples.

Results

Results in general would appear to be inconclusive.

When the tests for the nine cuts were considered individually, beef pot roast, grilled pork chops, and pork roast were the only cuts for which the judges were able to correctly distinguish a difference in cooking procedure. For these three cuts, the scorings were significant. For four cuts, more judges made incorrect pairings than made the right choice, and for two cuts, the number of right and wrong pairings was the same. For none of these six cuts was the difference significant at the 0.05 level.

However, when the scores for all tests for all nine cuts were pooled, and the right and wrong pairings examined statistically, the correct judgments were found to be significantly better than chance. In fact, the Chi-square of 39.6 which was obtained indicates a result beyond the 0.005 level of significance.

Preference ratings were more definite, statistically speaking. After the judgments of those who failed to pass the check tests and those who had "no preference" were eliminated, twenty-nine preferences were expressed. Of these, twenty-one were in favor of meat cooked unthawed, a significant preference.

It must be noted, however, that these preferences may have little meaning insofar as they reflect preference of a large population. These were "expert" judges, selected for their high taste acuity, and no tests were made to learn whether they were or were not representative of a large population. To obtain such an answer, a consumer panel composed of many tasters representative of the population would need to be used.

Discussion of Techniques and Judges' Performance

TASTING PROCEDURES

Taste testing, or flavor measurement, is an area receiving more and more attention, both by food processors and food administrators. For those who are interested in delving into the subject more thoroughly than it is possible in this paper to do, the review by Dawson and Harris (9) can be recommended.

It is almost redundant to state that the need for objectivity in methods of assessing judgments which can be handled statistically is great. Thus far, techniques for determining discrimination (difference) have been considered more reliable and reproducible than those for preference tests. In this area, that is, in determining differences, two techniques, known as the duo-trio and triangular tests, have perhaps been most favored, the latter being considered the more reliable of the two.

In the duo-trio test, three samples alike in appearance are presented to a judge, the first of which is labeled a "control." The judge is asked to identify one of the two remaining samples as identical with the control. The number of correct judgments in identifying the odd sample is noted, and the degree of significance above that which might be expected by chance can be determined statistically, by the Chi-square method (6), by binomial expansion (10), or by calculation of the Critical Ratio (3).

The triangular or triad test, which was used in this study, has been defined quite simply by Byer and Abrams (11) as follows: "The taster is required to designate the odd sample of a group of three samples, two of which are alike and one different." Thus, there is no "control" sample.

Peryam and Swartz (3) characterize this method as "somewhat more complex" with controlled conditions not as easily maintained, but comment that it has been found to give greater precision in many instances. It has the advantages of being easier to conduct, requiring less of the experimenter's time, and fewer judgments to attain statistically significant results. Harrison and Elder (12) have stated categorically that the "triangular test is obviously the most efficient," although they did find some statistical indication of a psychologic hazard involved in the procedure itself, in that judges tend to select the middle sample presented, thus producing a bias due to the plan of the study. They comment, however, that this bias can be reduced by randomizing of the samples. A study by Schutz and Bradley (13), however, disputes this finding of bias-by-position. They analyzed data from two studies, one done at the Quartermaster Food and Container Institute for the Armed Forces and the other at the University of Illinois, and learned that no one position was chosen significantly more often than another.

Byer and Abrams (11) also have reported that taste differences may be somewhat obscured by the test procedure itself, and they found that two-sample test results reflected discrimination of a higher statistical significance than did those of triangular tests. Their tasters showed little, if any, tendency to select correctly the odd sample and to be more correct than others in their quality judgments.

Thus it is apparent that the problem of the human element and of translating it into reliable statistics still remains a hurdle. Byer and Abrams are not the only ones who have questioned the validity of judgments of so-called expert panels. Schlosberg *et al.* (14) from Brown University also reported work along this line at a symposium in 1954 sponsored by the Quartermaster Food and Container Institute. These workers could find no clear-cut effect of short selection and training programs on the performance of either difference testing or preference panels. However, Schlosberg did point out that certain limitations would make it impractical simply to select a panel by picking passersby at random, i.e., lack of intelligence, lack of education, sensory defects which may have developed with age, and so on.

These findings of the ineffectiveness of training were challenged at this symposium in a round-table discussion by Hanson of the Western Utilization Regional Branch (14), who stated that in that laboratory longer training, in contrast to the shorter training at Brown, does make quite a difference in results, with panels being able to distinguish smaller and smaller differences with additional experience. Benefits of training in increased efficiency of judges have also been noted by Hopkins (15) and Moser and coworkers (16). In the present tests under discussion two training periods were held to acquaint the judges with the methods used and to build their confidence and knowledge in taste perception. While it is thought that this did improve the performance of the judges, if it did not, at least it made the later testing easier to accomplish by giving some operating experience to the judges before the actual tests began.

The difference in performance between the expert judges in the present study as compared with the "non-judges" who failed to qualify as experts is of interest on this point. The "expert" judges paired correctly 52.4 per cent of the time, compared with 41.1 per cent for the non-judges. Although this difference was approximately 11 per cent, when the data were submitted to a Chi-square test, the difference was not statistically significant.

The ability of the check test to eliminate judges of low taste acuity at the moment was also scrutinized. Of the total persons taking the tests (experts and non-judges), those who passed the check test were able to pair correctly 51.6 per cent of the times samples were offered. Those who failed to pass, paired correctly only 37.3 per cent of the time. This difference is even larger than in the comparisons of judges and non-judges above. However, the Chi-square test failed to show a significant difference at the 0.05 level, even for this difference.

Data were analyzed further, first using only the judges' performance scores for correctness and then only the non-judges. In both instances, as with the pooled data, the differences between the persons who passed the check test and those who did not were not significant at the 0.05 level. Thus the use of the check test to predict tasters' efficiency appears to have been ineffective.

Although the methods of comparison are not similar, this conclusion serves to bolster Schlosberg's belief (14) that college students interested in psychology generally appeared to make equally good judges and that time and energy usually spent in selection and training might well be devoted to increasing the size of panels, or the number of judgments obtained from each member. On the other hand, Hanson stated (14) that only 30 to 40 per cent of a group of scientific personnel might be expected to make good panel members. Applicants for the present study were drawn from faculty, students, and employees of Teachers College, Columbia University, and thus perhaps fall in an intermediate position between Schlosberg's more or less homogeneous group of students interested in psychology generally and Hanson's scientific personnel.

VALIDITY OF PREFERENCE TESTING

The validity of the judges' preference for meat cooked unthawed, however, appears to be even more subject to some question statistically, as well as from the standpoint of the "expertness" of the judges and its representativeness of a large population. Schutz and Bradley (13) examined the technique of asking judges, after identifying an odd sample of three, for a preference in order to learn whether the combining of difference and preference testing is statistically valid or "false economy." They felt that perhaps the claim might be correct that tying together of the two types of tests may result in a serious disturbance of the preference response, even though no experimental data were available to support it. They analyzed the figures from the studies of the Quartermaster Food and Container Institute and the University of Illinois and found that samples called "different" were significantly less preferred at the 1.0 per cent and 0.1 per cent level of confidence, respectively.

They also conducted a third study, having subjects first rate tomato juice samples by the hedonic scale to learn their preferences. The significantly preferred samples were then presented as the "different" sample in a triangular test, but with the less-preferred serving as the two identical samples. The ratings for the "same" (previously less-preferred) samples and the "different" previously preferred) sample did not differ significantly when presented in the difference-preference situation. Schutz and Bradley, therefore, feel that the use of preference tests in conjunction with difference tests is contra-indicated.

PERSONAL CHARACTERISTICS OF JUDGES

Certain rules have been laid down for use in selecting taste judges, some of which have apparently been evolved empirically.

Sex. Claims have been put forth for greater efficiency as judges for women. Weckel (17) reported that men are better at identifying solutions, while women excel in recognizing odors, whereas Langwill (18) found that women have a higher taste perception for sweet, sour, bitter, and salt, but that their taste preference differed from that of men for excessively salty and sour foods.

In this study, no sex difference in taste acuity was found among applicants who successfully passed the first test. Nine out of 37 male applicants, or 24 per cent, and 17 out of 69 female candidates, or 25 per cent, passed the first test. On the second test, 3 of the 9 men (33 per cent) and 7 of the 17 women (41 per cent) passed. These differences were not statistically significant and do not support the contention that women are better tasters than men.

Age. Age, too, has been implicated by some investigators as a factor in poor taste perception. Young judges (average age eighteen years) used by Baten (19) were apparently more capable of distinguishing differences in strengths of salty and sweet materials than middle aged (between thirty-five and forty years) subjects. This was not true of sour materials, however. Helm and Trolle (6) found that the age group, thirty to thirty-nine years, had maximum taste sensitivity and that the percentage of correct answers decreased in the younger and older age groups. They did, however, question the representativeness of their group because of its small size, and caution that these findings should not be interpreted as a general rule.

This investigator tested applicants ranging in age from nineteen to fifty-eight years. Of the original 106 candidates, 18 were over forty and 88 were under forty. The final panel of ten persons who qualified by passing the second test with the highest scores was composed of two persons over forty and eight under forty. The proportion of original applicants finally accepted was slightly greater for the older group. Thus these data give no evidence of taste deterioration with age.

History of Sinus or Hay Fever. During the selection of the panel, the problem arose as to whether a past history of sinus or hay fever might make a difference in ability to taste. The investigator was also aware of the categorical rule stated by several researchers (5, 20–22) that candidates susceptible to head colds, sinus infections, mouth infections, and food allergies should be eliminated from consideration without further ado. It was, therefore, decided to ask applicants about any past history of sinus or hay fever. Some applicants had already taken the tests and were no longer available for questioning, but it was possible to obtain this information from forty-four.

Of the ten who "made" the panel, four reported such a medical history. Sixteen of the 44 applicants reported having sinus or hay fever, a percentage of 36. Thus the proportion of applicants who passed the second test and became members of the expert panel (40 per cent) was actually slightly greater than the

percentage in the total sample of 44. From the tests used, there was no evidence to indicate that previous illness from hay fever or sinus caused any later failure in taste acuity or that this fact should automatically disqualify a person from a tasting panel.

Summary

Procedures used in selecting an expert taste panel to determine whether a difference was detectable between the taste of nine cuts of frozen meat thawed prior to cooking and that cooked from the frozen state are described. The value of the technique (triangular testing) is discussed in comparison with reports of other investigators, as well as the efficiency of the method of selecting panel members. Age and sex were not factors in taste perception in the candidates for this panel, nor was a past history of hay fever or sinus trouble.

A taste difference between the samples of meat prepared by the two methods of handling was detectable by these judges as a group. Individual cuts of meat, however, were not distinguishable except in the cases of beef pot roast, grilled pork chops, and pork roast. A check on preference indicated a choice significantly in favor of meat cooked from the unthawed state.

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Growth and Lysine-Tryptophan Ratios

Reporting before the Division of Biological Chemistry of the American Chemical Society in Minneapolis in October, A. A. Albanese, St. Luke's Hospital, New York City, said that calculations from nitrogen balance and body weight data of infants maintained on controlled diets has disclosed that utilization of dietary proteins for growth is linearly related to the lysine-tryptophan (L/T) ratio by the equation $y = 0.28\ (L/T) - 0.15$. y increases directly as the dietary L/T approaches 7.0, the L/T of dominant mammalian tissue proteins. Thus, when $y = 1.0$ for an evaporated milk diet (L/T, 4.3), bioassays of an isocaloric and isonitrogenous bovine plasma protein diet (L/T, 6.0) yielded a y value of 1.8 (calories, 1.75). Further validation of equation was derived from the findings that L-lysine reinforcement of evaporated milk or casein digest diets to an L/T of 6.5 to 7.0 increased y from 1.0 to 1.7. Also in accord with the equation, small additions of L-lysine to a wheat gluten diet increased y from 0.5 to 1.0.

Current Comment

The Dietitian on the Mental Health Team[1]

FLORENCE M. O'BRIEN

Chief, Dietetic Service, Veterans Administration Hospital, Chillicothe, Ohio

OUR mental hospitals are today going through a period of rapid change, with different hospitals in different stages of this change. Each year fewer patients are being restricted to bare and empty rooms with locked doors and barred windows. The trend today is toward open wards and open hospitals. We now have more effective means of controlling the various behaviors of patients than were available in past years—sedatives, electro-shock therapy, sleep treatment, psychotherapeutic procedures, and many new drugs. Thus more and more people in the communities are being encouraged to visit the hospitals to learn what is being done for the mental patients, and they are being invited to assist in the treatment programs. Thousands of volunteer workers regularly spend time in our hospitals. Competitive sports, such as baseball and football, are sponsored by hospitals where local teams come to the hospital and compete with one another—and with teams made up of mental patients. These players get to know and understand the patients by such contacts that were never even dreamed of in the past.

Mental Health Week and Hospital Day are being used as educational aids. In 1955, it was estimated that 25,000 people visited our hospital on Hospital Day. The doors were literally thrown open, and men, women, and children visited wards, dining rooms, treatment rooms, and craft shops. In these ways our local people learn about mental health, and when mental illness strikes in their own families they no longer hide, but seek competent help. They realize more each year the part that the local communities play in the all-out program of mental health.

As an example of the communities' participation, I'd like to tell you of the part that our patients played in the Ross County Sesquicentennial Celebration. The program committee requested the hospital authorities to select patients who would enjoy taking part as actors in a pageant depicting the growth of Ross County. The patients and members of the community wore beautiful costumes, rehearsed, and put on the act each evening of the event. We all felt that the patients (and you would have to know them personally to tell them from the other actors) were outstanding. It is also interesting to know that some five hundred patients from our hospital visited the Ross County Fair this past fall, unattended, and there was not one unpleasant incident, thus indicating that they were well treated by all of the people with whom they came in contact.

The Dietitian on the Treatment Team

But, the open wards and open hospital call for a new concept of an old familiar term "the treatment team." Today the treatment team includes: (a) the patient, (b) the patient's family, (c) the fellow patient, (d) the community, (e) the volunteer workers, and (f) every one in the hospital, from the administrator to the elevator operator.

How does a dietitian in a mental hospital work as a member of the "treatment team"? Dietitians do not become members of the treatment team by accident. You must have a real desire to help people. Mental patients must have confidence and trust in you. They need to know you as a friend. You cannot obtain this friendship, trust, and confidence by sitting at your desk; you must get out in the wards and dining rooms at meal time and let the patients know who you are and that you are interested in their welfare. You must train yourself never to be abrupt with a patient; by careless shortness with a patient, you may break down a confidence that has taken some other member of the team weeks to build up. Always remember that you, as a dietitian, have a unique position in the treatment team, because you usually serve each patient in the hospital, at least three times each day, where most other members of the team may only come in contact with the patient once or twice each week.

Naturally the dietitian's most important job is the procurement, the preparation, and the service of food. I'd like to discuss these subjects in the order in which I have listed them.

Food Procurement

The procurement of food today is a real challenge. You are missing one of the most interesting aspects of your job if you fail to keep abreast of the times. The food industry is one of our largest and most competitive industries; constant research is going on to grow better food, to process food more economically, and to package it more attractively. A food

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 20, 1955.

item that was satisfactory and economical last year may be extravagant this year. You cannot judge by the unit price. For example: only a few years ago the purchase of eviscerated poultry would have been uneconomical, but today it is a wise selection. The same is true of many other food items. Constant study is needed to get the best buy for the best price.

Don't be afraid to buy new foods or foods that haven't customarily been served in your hospital. Patients are becoming more cosmopolitan every day. They are conscientious television viewers, and they see and learn about everything on the market through the clever advertisements. Also, people today travel extensively, so that local and regional food habits are becoming almost things of the past.

You must become an expert on all food specifications (you can obtain federal standards and grades for practically any food on the market). Know what you want to purchase, be explicit in your orders, and then be sure that you get what you ordered.

Many of us have the additional challenge of using food produced on a farm. The work involved is done partially by patients under the medical rehabilitation program. This plan is often the dietitian's greatest headache, but it has been my experience that when the dietitian shows some active interest in the farm superintendent's problems, she will be invited to help in the planning. Food produced on a hospital farm is usually sold to the dietitian (at least, there is a paper transaction) for the current market price. When you can sell the farmer on the idea that top prices will be paid for top quality products, you will receive a higher quality of farm produce. Right here is where you really need "team work," because first and foremost your hospital administrator must be sympathetic to your problems, as well as to the farmer's problems.

If you use farm produce at all, you are very likely to be furnished pork, and if there is any difficulty, this is where you will probably have an outstanding problem. If you agree to pay the current market price for top grade pork carcass (180–210 lb.) live weight, as well as current market price for other grades of pork carcass, the farmer will soon realize that he is making money by keeping his pork within the U. S. #1 weight range.

Since July 1953, we have been receiving approximately thirty hogs every other week. We have a contract with a local abattoir to slaughter, chill, and cut the carcasses into wholesale cuts. We then sell him the heads, feet, and the lard that is in excess of our needs. He also cures the hams and bacon. This has been the greatest improvement in my opinion and experience in using carcass pork.

Food Preparation

Food preparation, of course, starts with menu planning. To plan menus you must know the patients for whom you are planning. Some dietitians must plan menus for all ages and for both sexes. You must know the physical layout of your own service. You can't plan to have more food items prepared in the ovens than you have oven space. It is also essential that you know the capabilities of your staff.

Mental patients are pretty normal in wanting to identify what they are eating. They don't like casserole dishes made up of odds and ends any more than we do. They like to have things properly seasoned and well cooked—served at the correct temperature, in the shape and size that one would expect to receive at home or in a good restaurant. For instance, the most expensive recipe for pie, if it is baked on a bun pan and cut in squares, is no more a piece of pie to a mental patient than it is to anyone else. I'll admit that it takes longer to make pies, but it is worth while for the patient certainly knows the difference.

It also pays to be quite clear when writing menus. In large services, it saves time when everyone understands what is wanted. It is especially important, in serving the mentally ill, to have the menus for modified diets as nearly like the regular menu as possible. Not only is this more economical, but the patient on the modified diet is more satisfied.

The number of geriatric patients is increasing every day, and it won't be long before they will be one of our greatest challenges. We have men in our hospital from the Spanish American War, almost ninety years old. For the most part, these elder guests are bed patients and either do not have dentures, or they will not use them. Many of them are blind or palsied and must be spoon-fed. This time-consuming task is performed at the breakfast and noon-day meal by nursing aides, but in the evening, from Monday through Friday, each week Grey Ladies assist in this arduous job. Each day a different group of women come from as far as 70 mi. away. Most of the patients are grateful for this service.

Service of Food

The service of the food is just as important as the planning and cooking. The trend today is to use cafeteria service where it is feasible because it requires the patient to make decisions at each meal and aids in keeping him in the world of reality. For this same reason, the use of a selective menu is being stressed. No matter what type of service is used, the important thing is to serve the food attractively. That's hard to do, unless the dining room, in which the food is served, is light and cheerful with colorful drapes and interesting pictures. It must also be kept clean and tidy. In fact, it has been found that the more attractive the room is, the less destructive the patient will be. The accompanying picture shows one small dining room, where a group of young hyper-active patients are fed. Prior to redecorating this room, it was equipped with oblong wooden tables and bentwood chairs; and the general appear-

Patients' dining room, decorated with pleasant draperies, murals, and modernly-designed furniture

ance was bleak. The patients were of such a type that no one would consider using anything interesting or attractive in this room because it was generally thought that they would rip to pieces anything that they could reach. They were served on plastic dishes with one spoon. When this room was repainted and refurnished with the round, smaller tables and the chrome chairs, with almost-white leather backs and seats, and the colorful mural and drapes were added, everyone wondered what the patients' reaction would be. They were even complimentary with their remarks, but their changed attitude made the biggest impression. They were quiet and even exacting with their table manners, and the best part is that it didn't last for only a day or so. The murals have been in the dining room for over two years, and not a single mark has been made on any of them. We have not had to replace a single chair. We have changed the curtains and repainted, but only because we feel that unless the place is kept in tip-top shape, the patients will lose pride in it.

We supply silverware for all of the patients, except occasionally for short periods when a patient may be restricted to the use of a serving spoon. I believe that the restriction of silverware takes more away from a person than any other thing.

Other Areas of Dietitians' Work

In addition to planning and serving three meals a day and providing the prescribed nourishment, I would like to tell you of some of the other things that we, as dietitians, do in a hospital for the mentally ill as members of the treatment team.

STAFF MEETINGS

We attend meetings, such as staff meetings held several times a week for the purpose of obtaining information regarding patients from the various members of the treatment team. These meetings are attended by the ward physician, the charge nurse, the social worker, the dietitian, the charge ward aide, a representative from the corrective therapy clinic, a representative from the educational therapy clinic, the attending ward aide, and the ward food service worker.

The ward physician gives the diagnosis of the patient, and the social service worker presents the case history. Then the various other members of the treatment team report on their observation of the patient. Finally, the patient is called in and invited to discuss any phase of his treatment that he cares to talk about. It is interesting to observe the spontaneous participation of all the members of the treatment team, as well as the patient. The ward physician finds this kind of a conference most helpful, and it gives every member of the treatment team a sense of belonging. It also gives the patient a good picture of the various services vitally interested in his welfare.

PICNIC OUTINGS

From the middle of May to the first of October, picnics are scheduled for all ambulatory patients, so that each one gets to enjoy a picnic once or twice during the summer. Some of these picnics, particularly those for the older patients, are held right on the hospital grounds in a picnic grove. The younger men are taken by bus for a day's outing of fishing or swimming or both. Such an outing, of course, would be a complete flop without a picnic lunch, which is supplied by the Dietetic Service. At our hospital, we send such picnics out Tuesday, Thursday, and Friday each week during the summer.

One of the groups that goes out each Friday is from a research program. The patients under study are clinically diagnosed as schizophrenic, catatonic type. Schizophrenia is considered the most common and the most malignant of the major mental illnesses. It is characterized by withdrawal of interest to a varying degree from the world of reality, particularly in the area of inter-personal relationships. Accompanying this withdrawal, a progressive deterioration of the personality and disintegration of the emotional and intellectual aspects of mental life occurs. The goal of this research program is the re-socialization of the patient. It has been found that there are three phases of the total treatment effort: (a) physical and emotional relaxation, (b) educational therapy, and (c) finally re-socialization. The main idea is to get the patient to relax, to be comfortable, to help himself, and to help others. Each Friday about twenty-five of these patients are taken for an outing. We send food and equipment with the group, and the patients are encouraged to assist in the food preparation and service. The therapists report that this activity has proved to have great therapeutic value.

PATIENT EMPLOYEES

We also have in our hospitals what is known as the "member employee program". Under this program the patient is either discharged from the hospital or placed on trial visit status. He lives on the station, in quarters provided for the group, and works on the station under supervision for a salary. He carries keys just like an employee and can go and come as he wishes. For example, if he has Saturday and Sunday off and desires to take a trip, he is at liberty to do so, provided he has sufficient money and the distance permits him to return in time for his duty schedule. These member employees take their meals in the employees' cafeteria. The Dietetic Service employees in charge of the employees' cafeteria are instructed to treat these member employees just as they do their regular co-workers and to observe their behavior so that when called on, they are ready to give a report.

Another group is known as the "candidate member employees." This type of patient lives on a ward and is allowed passes. The counseling psychologist, working directly with the Veterans Administration Volunteer Service, obtains odd jobs for these candidate employees, either with merchants or farmers in the community. They must be paid the national minimum wage. These patients usually carry their lunch from the hospital. The patient, as part of this learning experience, contacts the dietitian's office and makes his own arrangements for the lunch. We make sure that he will take his lunch to the employer and ask that it be put in the refrigerator. We feel that it is most important that the lunch be prepared in such a manner that the patient will be proud to hand it over to the employer. The feeling of inferiority that the patient might get from a poor lunch, packed carelessly, may make the difference between his regression or advancement.

Even Alcoholics Anonymous has called on the Dietetic Service for assistance. Leaders of AA groups within the hospital find that their meetings are much more meaningful when there is a good degree of participation among the members. A cup of coffee and something to munch on helps to break down the social barriers, even with the alcoholic.

WORK WITH INDIVIDUAL PATIENTS

Some days we feel that there isn't a program in the hospital that can get along without the Dietetic Service, but in my opinion, the greatest job satisfaction comes from the little things that you do for the individual patients.

We had a patient from the backwoods of Ohio, who had been hospitalized for several years. In the early spring he was given ground privileges and naturally went roaming in the woods. One day he brought in a wheel-barrow full of sassafras—enough to make sassafras tea for the entire hospital. I confess that I didn't even know what it was, but was assured by the local people who were brought up on drinking sassafras tea for a blood tonic every spring, that it was the genuine thing. We made the sassafras tea for everyone and it was enjoyed, but the one who really enjoyed the affair the most was the patient.

We frequently have requests to cook game. Usually the patient receives a gift from an employee with whom he works. Last fall a patient came in with a squirrel that he claimed to have dressed himself. It was apparent that it had been done by an expert and when questioned as to where he had gotten the squirrel, he admitted that he had trapped it (which is against the law) out of season on the government reservation (which is also against the law). But the patient was so pleased with his hunting success that we cooked the squirrel, and no doubt it tasted just as fine as though it were legally obtained. Of course, it was necessary to report the incident to the ward physician, so that he could explain to the patient that the trapping of any game on the reservation was illegal and to counsel him not to do it again.

Another summer and fall pastime of patients is the gathering of fruits and nuts. Wild raspberries and blackberries are plentiful in the woods around the hospital. When patients come in with several quarts of berries, we allow them to clean and wash them and share them with their friends in the dining room. The same is true of nuts. Patients gather them, dry them, and then spend days cracking them and getting the meats out. Then, they frequently request that we bake a cake. We usually make these special cakes on days that we have cake on the menu. We make festive layer cakes, putting nuts in the batter and then icing the cakes with a generous nut icing. The patient usually takes the cake to his own building and frequently the nurse assists him in giving a party. You may be sure that, in the opinion of the patient, he has helped in producing the finest cake ever made.

These are only a few of the ways that the treatment team in a mental hospital works together. If you like people and have a sincere desire to help them, then you will find working with the mentally ill a rewarding experience. And, as this program of all working together for the good of the mental patient progresses, the general mental health of our nation will improve.

Cooking vs. Cookery

What is the difference? *Cooking* is the application of heat to food to make it more tender, digestible, and palatable. *Cookery* is the use of the best methods of cooking and preparation of foods—an art. Which do you practice?—*The Montague Messenger, n. d.*

Standardized Diets?

Some of the new diet manuals are now including the six examples of diabetic diets prepared by the Joint Committee of The American Dietetic Association, the American Diabetes Association, and the Diabetes Branch, U.S. Public Health Service. In the manuals, the six diets appear as form diets, or standardized diets for use by the dietary department and medical staff. The diets, of course, are precalculated and outlined in terms of the food allotment for each diet. All that is necessary is that the physician specify the number of the diet and the food will be served. Since this practice is somewhat new, comments were solicited from members of The American Dietetic Association who served on the original committee, as well as others.

Doris Johnson, *Director of Dietetics, Grace-New Haven Community Hospital, and Assistant Professor, Yale University School of Medicine, New Haven, Connecticut:*

When the committee made up of representatives of The American Dietetic Association, the American Diabetes Association, and the Diabetes Branch, U. S. Public Health Service, began its work of developing the Exchange Lists in order to bring about some standardization in the planning of diabetic diets, considerable thought and discussion were given to the problem of whether it was advisable to have *form diets* prepared to use with the Exchange Lists.

It was finally decided that a certain number of form diets would be worked out in order to supply physicians who do not have available the services of a dietitian, with meal plans that could be given to patients. It was realized that in preparing such standard meal plans, they could be misused or they could perform a valuable service. It was felt, on one hand, that many physicians *will* use form diets and that it would be wise to have such forms available from an authoritative source.

On the other hand, it is one of the cardinal principles of our teachings that all diets should be adapted to the individual patient, his social, religious, and economic situation. Merely handing the patient a form will not accomplish this. Observation has shown that the degree with which a patient will be able to follow a diet satisfactorily is correlated with the adaptability of the diet to his individual situation and the amount of instruction and interpretation which he is given. It is disturbing, therefore, to find that dietitians are making more and more use of these standard meal plans and neglecting to individualize the diet for each patient.

It would seem that dietitians should strive to carry out the best diet therapy practices possible and not follow practices that are admitted to be poor but which must be done in some instances if anything is to be done at all. These form diets were not intended to be used to replace the valuable role which dietitians play in the planning of patients' diets.

Dietitians would do well, therefore, to evaluate carefully when to resort to the use of such form diets in lieu of good dietary instruction and to question the inclusion of these standardized meal plans in diet manuals.

Elmira E. Blecha, *Instructor in Dietetics, Veterans Administration Hospital, Houston:*

It is my feeling that dietitians should stress planning diets to suit the individual; therefore, I do not favor placing "standardized diabetic diets" in diet manuals.

Henriette D. Gebert, *Director of Dietetics, Passavant Memorial Hospital, Chicago:*

The A.D.A. form diets appear to be back-firing on dietitians and challenging several of our nationally known diabetes specialists. Some accept the new Exchange Lists and others cling fiercely to their outmoded systems.

I believe part of our difficulty is a lack of communication with physicians, and secondly, a lack of flexibility on the part of the dietitian herself. It is a pity that the form diets were ever available to dietitians, and certainly they do not belong in any up-to-date manual.

Clare Forbes, *Chief, Frances Stern Food Clinic, Boston Dispensary, Boston:*

In regard to the standardized diets used by the dietitian, there is reason for concern. Since the procedure for planning and constructing the diabetic diet requires only a few simple steps with which the dietitian should be familiar, there would seem to be no need for dietitians to use standardized diets. Furthermore, the use of standardized diets tends to separate further the patient and his objectives and goals from the diet.

The dietitian should know how to plan a diet based on the patient's individual needs. If the dietitian is one who relies on standardized diets, there is also danger that she will lose sight of the scientific basis of the diet and may not be able to interpret the "hows and whys" on which the standardized diets are based to other professional workers. The dietitian should also have a comprehensive understanding of the basis for the exchange system and how the size of serving and the standardized figures used for calculation were determined.

Corinne Robinson, *Head, Department of Food and Nutrition, Drexel Institute of Technology, Philadelphia:*

I have mixed feelings about the inclusion of the calculated diabetic diets in diet manuals. I have always felt that these diets would be a considerable help to the physician who had neither the time nor the necessary training to calculate his own diets and that they would also be helpful for institutions not having a qualified dietitian.

It seems to me that it was never the purpose of the committee to reproduce these specific diets in *diet manuals prepared for hospitals having qualified dietitians*. One of our essential functions is to individualize dietary planning for the patient, and if we are going to resort to stereotyped instruction patterns, we defeat our purpose.

Elizabeth K. Caso, *Nutritionist, Cambridge Department of Public Health, Cambridge, Massachusetts:*

I agree definitely with the concept that the six form diets were developed chiefly for the physician who does not have time or skill to adapt the diet to the individual patient's food habits. Repeatedly I have brought out to groups of dietitians that these six form diets are not for their use. They have the knowledge and time (or should make the time) to "personalize" the patient's meal plan.

On the other hand, for the physician, I think they have been a real help in standardizing this aspect of dietary management. Of course, they, too, need some individualization. However, I believe they tend to lead the physician to thinking in a more realistic and practical manner. Therefore, I have not objected to seeing the sample diet prescription included in manuals. Also, it sometimes follows that the sample meal plans (only the total food for the day) may be included in a manual. I would not object to this if it were clearly understood that this was only a guide.

Recently I talked with a charming young dietitian who had just completed her dietetic internship in a hospital. She mentioned that they were never allowed "to write up" a diet in the diet kitchen until they had gone to see the patient and learned something of his food habits. I think the matter of individualization cannot be stressed too strongly.

Current Literature

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; and the Journal staff

THE AMERICAN JOURNAL OF NURSING

Vol. 56, March, 1956

* Nephrosis in children. 1. Medical aspects. S. A. Kaplan.—p. 300.

Nephrosis in Children. Patients receiving adrenocorticotrophic hormone (ACTH) or cortisone for diseases are usually on diets low in sodium chloride. In the case of the nephrosis patient being treated with ACTH, a regular diet is advised rather than one low in sodium chloride. The reason for this is that during the diuresis which usually occurs between the ninth and thirteenth day of the therapy, enormous quantities of sodium and chloride may be lost from the body and the patient may exhibit collapse and even convulse because of this deficiency.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 46, March, 1956

* The conclusion of a ten-year study of water fluoridation. D. B. Ast and E. R. Schlesinger.—p. 265.

Safety of Water Fluoridation. A ten-year study on the safety of 1.0 p.p.m. fluoride water was made by supplementing the water of Newburgh, New York with sodium fluoride bringing its content to 1.0 p.p.m. while the city of Kingston, New York served as a control with water of a fluoride content of approximately 0.1 p.p.m. At the end of the ten years the children in various age groups in Newburgh had less decay, fewer missing teeth and fillings than the Kingston children. The decay, missing teeth, and filling rate for first permanent molars was lower in the Newburgh children. It was observed that ingested water fluorides afford selective protection to the adjacent surfaces of teeth in comparison with the biting surfaces. The Newburgh children came out ahead on examinations for dental fluorosis, enamel opacities, and signs of gingivitis. General medical examinations, roentgenograms of the right hand, both knees, and the lumbar spine were taken along with laboratory examinations, including hemoglobin level, total leucocyte counts, and routine urinalysis. No differences of medical significance could be found between the two groups of children. The study proved that fluoridation is effective in reducing dental caries and that it is a safe public health practice.

CHILDREN

Vol. 3, March–April, 1956

* Nutrition services for crippled children. P. G. Stitt and B. S. Burke.—p. 55.

Nutrition Services for Crippled Children. The potentials for nutritional services in crippled children's programs are almost boundless. Nutritional focus provides a practical method of shifting the crippled child's attention from his defect to his total well-being. It gives tangible benefits to his family in terms of physical protection, budget easement, and mental hygiene. When the child is newborn, especially if it is premature, good nourishment is a primary prevention against crippling and is a secondary prevention when it prevents abnormal conditions resulting from the crippling. In many children the crippling condition may diminish the possibilities of meeting the child's dietary needs. In the case of the cleft palate, to which poor nutrition is inextricably related, the nutritionist joins the doctor, nurse, and medical team. The same holds true for cerebral palsy, polio, and other crippling conditions such as severe burns. Case histories are presented to emphasize the problems of children with these physical handicaps.

ENDOCRINOLOGY

Vol. 58, February, 1956

* Analysis of the blood sugar response of obese-hyperglycemic mice and normal mice to hormones: insulin, glucagon, and epinephrine. K. H. Shull and J. Mayer.—p. 220.

Response of Obese Mice to Hormones. The obese-hyperglycemic mice showed a hypoglycemic response to administered insulin comparable in magnitude to that displayed by their insulinized non-obese controls. However, the obese mice were not killed by insulin even when given repeated doses under fasting conditions. The non-obese control animals when treated under similar conditions with insulin were always killed by this hormone. The fed obese-hyperglycemic mice displayed hyperglycemic responses of 79 mg. per cent and 149 mg. per cent respectively to the parenteral administration of 27 mcg. of glucagon or epinephrine. After a 12-hr. fast, glucagon and epinephrine produced 197 mg. per cent and 249 mg. per cent increases respectively in the blood sugar of the obese mice. In contrast, glucagon produced a small increase in blood sugar in the fed non-obese controls which was completely abolished by fasting. Epinephrine caused a marked hyperglycemic response in the fed non-obese mice; the hyperglycemia produced by this hormone was significantly decreased under fasting conditions.

FOOD TECHNOLOGY

Vol. 10, February, 1956

* Nutritional and biochemical effects of irradiation. R. R. Becker, H. C. Kung, N. F. Barr, C. S. Pearson, and C. G. King.—p. 61.
* The development of instant milk. D. D. Peebles. —p. 64.
* Post mortem changes in meat and their possible relation to tenderness together with some comparisons of meat from heifers, bulls, steers, and diethylstilbestrol treated bulls and steers. E. Wierbicki, L. E. Kunkle, V. R. Cahill, and F. E. Deatherage.—p. 80.
* Positional bias in sensory assessments. J. M. Harries.—p. 86.
* Effect of post mortem chilling on the keeping quality of frozen pork. D. L. Harrison, J. L. Hall, D. L. Mackintosh, and G. E. Vail.—p. 104.

Nutritional Effects of Irradiation. Experiments have shown that certain essential nutrients are destroyed to varying degrees when subjected to sterilizing doses of radiation. Three generations of experimental animals were studied, using a diet composed of five-sixths whole ground wheat and one-sixth powdered whole milk. The butter fat portion of the diet was irradiated from a Co^{60} source. There was no evidence of carcinogenicity in the animals. Nutrient loss was greatest in ascorbic acid and in the fat-soluble constituents, vitamin A, carotenes, and vitamin E. Enzyme inactivation was very slight, relative to nutrient destruction at sterilizing dosage, when radiation was compared with heat effects.

Development of Instant Milk. While the instant process and necessary equipment are simple, a great deal of care is needed to produce acceptable dry milk products in commercial quantities. Rigid control of raw material is essential. Since most instant products are used for beverage purposes, the milk solids purchased for conversion must be high quality, low-heat, spray-dried products. The process described here produced a non-fat dry milk with excellent flavor and shelf life. It is readily reconstitutable, possesses good pouring characteristics, and is non-caking. The ease of wetting is outstanding.

Post-Mortem Changes in Meat and Tenderness. This study was done on thirty-two animals including heifers, bulls, steers, and bulls and steers implanted with diethylstilbestrol. No great differences in tenderness were found between groups at thirteen days post-mortem. The hormone treatment seemed to produce slightly tougher meat at both three and thirteen days post-mortem. It appears that tenderness is closely related to degree of hydration of the meat proteins as reflected in the amount of juice expressed on cooking. If this proves to be so, then tenderness, shrinkage on cooking, drip on freezing, and rehydration after dehydration are primarily based on the water-holding capacity of meat proteins.

Positional Bias in Sensory Tests. Taste panels are subject to psychologic

biases. A tendency to give higher or lower marks to samples according to the position, or order, in which they are presented was evidenced by tasters. In sensory investigations involving a scoring system, the bias may be overcome by treating the sample code-number as a factor, including its effect in the main table of variance, and disregarding it in the tests of significance of main treatment effects.

Keeping Quality of Frozen Pork. With the growth of the frozen food industry, many locker plants were designed with a minimum of refrigeration for chilling pork carcasses. The importance of quick chilling has been studied. Pork from carcasses chilled for seven days before freezing deteriorated to a greater extent during frozen storage than that chilled for three and one days. This was proved in chemical and palatability tests. There was little difference in the quality of the meat chilled for three and one days. The cooling temperature seemed to have little effect on the keeping quality. Generally significant decreases in the quality occurred between sixteen and twenty-four weeks of frozen storage. This confirms the belief that pork carcasses should be chilled and processed soon after slaughter.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 160, February 25, 1956

- Nutritional value of quinua. Foreign Letters—Peru.—p. 698.
- Juvenile obesity. Foreign Letters—United Kingdom.—p. 702.

Vol. 160, March 3, 1956

- Chlortetracycline, a food preservative. Editorials.—p. 779.

Vol. 160, March 10, 1956

- Fibrocystic disease of the pancreas, a generalized disease of exocrine glands. P. A. diSant Agnese.—p. 846.
- Artificial sweeteners. Special Reports. Council on Foods and Nutrition.—p. 875.

Vol. 160, March 17, 1956

- Clinical and nutritional aspects of lipotropic agents. G. J. Gabuzda.—p. 969.
- Iron deficiency anemia in infants. R. L. Jackson.—p. 976.
- Cleft lip and palate. Editorials.—p. 977.

Nutritional Value of Quinua. Quinua, a Peruvian cereal, is 1.5 times as rich in protein as wheat and 2.7 times as rich in protein as rice. It contains calcium in much greater proportion, but is slightly poorer in carbohydrates than wheat and rice. If the production rate of quinua were to meet national needs causing a lowering of the price, quinua could be used more widely in making bread, crackers, cakes, and similar foods. Its increased use would help solve the Peruvian malnutrition problem.

Juvenile Obesity. The underlying causes for juvenile obesity may vary from simple gluttony to severe glandular dysfunction. Since the dieting of a child not blessed with intelligent and cooperative parents is almost impossible, the fat boy often leaves school with his defect uncured and with no concept of the improvement in his well-being that a significant weight reduction would confer. It is sometimes not appreciated that in the child as in the adult, the urge to overeat may be a symptom of an underlying anxiety.

Chlortetracycline, a Food Preservative. The use of chlortetracycline in processing freshly-killed poultry will extend the store life which has been about seven days, to two to three weeks. Its use is in accordance with the legal responsibility of the Food and Drug Administration. For the establishment of the tolerance, the order states, "A tolerance of seven parts per million is established for residues of chlortetracycline in or on uncooked poultry and this tolerance level should not be exceeded in any part of the poultry." A major factor in this ruling was that the small amount of chlortetracycline introduced into the carcass of the fresh-killed poultry would be readily inactivated during the cooking of the poultry. No active antibiotic would be eaten with the poultry.

Fibrocystic Disease of the Pancreas. This is a hereditary disease of children in which many and perhaps all exocrine glands are affected. It causes the absence of all three pancreatic enzymes, trypsin, amylase, and lipase. Foodstuffs are not digested and absorbed because of these absences. Fats are not split. A varying, but large percentage of the liposoluble vitamins A, D, and K are also lost. Much ingested food is not absorbed and malnutrition results. This involves the child's growth and development. Treatment is through dietary measures. With advancing age, as a general rule, there is less need for severe dietary restrictions; but the changes in the pancreas are not reversible, and dietary restriction, even though relaxed, will have to be continued indefinitely. Attention was first focused on the pancreas in considering this disease, but it was found that severe pulmonary involvement occurred in almost all cases of the disease.

Artificial Sweeteners. A report of the Food Protection Committee of the National Research Council concludes: "There is no evidence that use of the nonnutritive sweeteners, saccharin and cyclamates, for special dietary purposes is hazardous." It emphasized that knowledge of and experience with the use of cyclamate are more limited than with saccharin and that continued study is needed.

Lipotropic Agents. The term lipotropic is applied to the dietary factors preventing the accumulation of abnormally large quantities of fat in certain organs, usually the liver and kidneys. Materials with this ability which also affect the mobilization of fat from the organs range from proteins, lecithins, and lipocaic to substances such as choline, methionine, and vitamins. The richest dietary source of choline is egg yolk. Other good sources are liver, brain, kidney, heart, lean meat, yeast, soya bean, peanut meal, and wheat germ. Fruit, fruit juices, and vegetables are generally not good sources. Methionine is a sulphur-containing amino acid with a labile methyl group of which most plant and animal proteins contain a significant amount. Deficiency of dietary factors or alterations in the diet pattern are implicated in the production of fatty cirrhosis, although evidence is circumstantial and inductive. Best evidence comes from observations of children with kwashiorkor. Dietary factors are also implicated in the development of fatty cirrhosis associated with alcoholism.

Hypochromic Anemia and Infants. The most common nutritional deficiency of children in this country, hypochromic anemia, occurs most frequently during the latter half of the first year after birth. Iron available at birth depends on the adequacy of the mother's diet, length of gestation, and placental blood allowed to reach the infant. It occurs most commonly in infants receiving excessive amounts of milk and insufficient solid foods.

Cleft Lip and Palate. In animal experiments it has been found that a deficiency of riboflavin or pantothenic acid in the diet of the mother during pregnancy, the administration of an excess of cortisone or hydrocortisone, or a deficiency or excess of vitamin A will cause an appreciable increase in the number of offspring born with cleft palate and other deformities.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 218, January, 1956

- Polyunsaturated fatty acids in normal human blood. J. D. Evans, J. M. Waldron, N. L. Oleksyshyn, and R. W. Riemenschneider.—p. 255.

Vol. 218, February, 1956

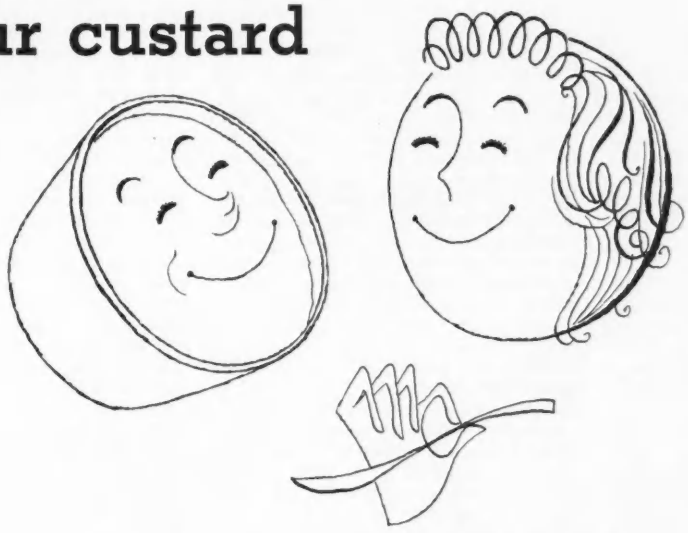
- The effect of different dietary fats on liver fat deposition. D. A. Benton, A. E. Harper, and C. A. Elvehjem.—p. 693.
- The turnover of liver glycogen in obese hyperglycemic mice. K. H. Shull and J. Mayer.—p. 885.

Polyunsaturated Fatty Acids in Normal Human Blood. To determine the amounts of polyunsaturated fatty acids in the blood of seven normal males in the postabsorptive state, a spectrophotometric analysis was made. The resulting data suggest that there is a characteristic distribution of polyethenoid acids in the fatty acids of both plasma and blood cells. Linoleic acid is predominant in the plasma, and arachidonic acid is predominant in the cells.

The Effect of Different Dietary Fats on Liver Fat Deposition. When different fats were fed at a level of 20 per cent in a low-protein diet (9 per cent casein), the level of liver fat in the rats was high when butter or lard was fed and was low when corn oil or margarine was fed. This effect was increased when the level of protein in the diet was decreased and when choline was omitted from the diet. The fatty acids of butter, which were isolated and fed as glycerides, caused liver fat to accumulate to the same extent as did butter fat. The solid fatty acid fraction of butter caused a much greater accumulation of liver fat than did the liquid fatty acid fraction, and stearic acid caused a much greater accumulation of liver fat than did oleic acid. The unsaponifiable material of butter was without effect.

The Turnover of Liver Glycogen in Obese Hyperglycemic Mice. Data on

How to put smiles in your custard



CUSTARD, as dietitians know, is a well-accepted dessert. It is pleasant to eat, unquestionably nourishing, fairly economical—an excellent choice in quantity-dessert preparation.

But face facts, girls. It *does* lack personality.

Now is the time to let *Instant* PET Nonfat Dry Milk put smiles in the custards you serve.

Custard made with *Instant* PET is custard such as you have never tasted before. It has *body*. It has *flavor*. It has personality *plus*. Beside it, custard made the ordinary way fades to a pale nothingness.

And, strictly on the practical side, custard made with *Instant* PET is far more economical than custard made with other forms of milk.

Try it? You'll be glad you did!

BAKED CUSTARD

For 50

1. Mix with an electric mixer at low speed .... **19 oz. *Instant* PET Nonfat Dry Milk (in dry form)**
   18 oz. Sugar
   38 oz. Eggs
2. Add gradually and mix until smooth ..... **4½ qts. Water**
   2 oz. Vanilla
3. Pour into 50 custard cups holding about ¾ cup each.
4. Sprinkle over top of custards, if desired .... **1 tablesp. Cinnamon**
5. Set cups in flat pans containing 1 inch of hot water. Bake in 350 oven (moderate) for 50 minutes, or until knife inserted near outer edge of custard comes out clean. Cool before serving.

HOME ECONOMICS DEPT. • PET MILK COMPANY • ST. LOUIS 1, MO.

the rates of glycogen turnover are few and unsatisfactory, even for the tissues of normal animals. It is surprising, since the rate of turnover of liver glycogen is a major characteristic of carbohydrate metabolism in any type of animal. Therefore, in an analysis of the nature of hyperglycemia in a group of obese mice and their controls, it was of interest to determine the rate of hepatic glycogen turnover. The levels of liver glycogen per gram of liver were similar in the obese hyperglycemic mice and their non-obese controls, but the former group had more than twice as much total glycogen. The greater total glycogen was due to the greater liver mass of the obese hyperglycemic mice. Mice, made obese by gold thioglucose, with livers of comparable size to those of the obese hyperglycemic mice also showed greater total glycogen levels.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 35, February, 1956

* A study of the rate of protein synthesis before and during the administration of L-triiodothyronine to patients with myxedema and healthy volunteers using N-15 glycine. K. R. Rispell, W. Parson, and G. Hollifield.—p. 164.

Insulin-I^{131} metabolism in human subjects: Demonstration of insulin binding globulin in the circulation of insulin treated subjects. S. A. Berson, R. S. Yalow, A. Bauman, M. A. Rothschild, and K. Newerly.—p. 170.

Effect of T^3 on Protein Synthesis Rate in Myxedema. The protein synthesis rate as measured by the N-15 glycine technique was decreased in six patients with primary myxedema. The administration of l-triiodothyronine restored the protein synthesis rate to a normal level. The administration of triiodothyronine to a healthy volunteer also decreased the rate of protein synthesis suggesting that an excess of thyroid hormone will also decrease the rate of protein synthesis. This N-15 glycine technique appears to offer insight into protein metabolism in man which is not obtainable by classical nitrogen balance studies.

JOURNAL OF HOME ECONOMICS

Vol. 48, March, 1956

* Very heavy and obese school children in Iowa. E. S. Eppright, I. Coons, and E. Jebe.—p. 168.
* Teaching methods in non-laboratory classes. D. M. Lucke.—p. 173.
* Decomposition of lard in the frying of French-fried potatoes and of fritter-type batters. M. Bennion and F. Hanning.—p. 184.
* Cooking with heat from tubular infrared quartz lamps. E. Beveridge, M. Purchase, and E. Lorch.—p. 201.

Obese School Children. Improved nutrition practices are needed for the overweight children. A study of approximately 1200 Iowa school children illustrated this. Of the boys, 11 per cent were heavy while 17 per cent of the girls were overweight. The children were considerably heavier than those of medium physique but almost the same height. Overweight was most prevalent for girls of twelve and older but when the nutrient intake met the recommended allowances, overweight was not conspicuous. Few differences between the overweight and medium-weight children were noted regarding hemoglobin concentration in the blood, or serum concentration of ascorbic acid, carotenoids, and serum alkaline phosphatase.

Teaching Methods. Ingredients of successful college teaching formed the basis for this study. Results of interviews with fifty instructors revealed that the majority believed in having course objectives, making them clear, and developing class activities in line with the objectives. The author feels that more study is needed to learn the value of student-instructor planning and student participation in evaluation. Instructors' expression, speech, mechanics, knowledge of the subject, and presentation of subject matter were rated high. As influencing factors on instructor's present methods of teaching, former teachers rated high. Informal contacts were believed to have some influence.

Decomposition of Lard in Frying. There is a surprising lack of recent information on small-scale deep-fat frying. The usefulness of lard as a less expensive frying fat might be improved if frying changes were better understood. Changes produced by frying potatoes or a fritter batter were observed. The frying of batter caused a sharp increase in free fatty acid while the frying of potatoes caused little change in comparison. Although the peroxide values remained low at first for both, the value for potatoes later reached the higher level. The smoke point was lowered by the frying of batter but was affected much less by the French-fried potatoes. The fat darkened quite rapidly when batter was fried and slowly when the potatoes were fried. Baking powder, milk, and eggs appeared to be the ingredients in the batter exerting great influence on the decomposition of lard. Fat absorption was reduced in the absence of a leavening agent.

Cooking with Infrared Quartz Lamps. A tubular infrared quartz lamp was recently introduced as a source of infrared radiation. It broiled meat faster than the electric unit. There was no difference in the quality of food which was tested by a panel of untrained judges. With the equipment used in testing, the lamp showed no advantage for surface cooking or baking.

JOURNAL OF NUTRITION

Vol. 58, January, 1956

* The quantitative amino acid requirements of young women. I. Threonine. R. M. Leverton, M. R. Gram, M. Chaloupka, E. Brodovsky, and A. Mitchell.—p. 59.
* The quantitative amino acid requirements of young women. II. Valine. R. M. Leverton, M. R. Gram, E. Brodovsky, M. Chaloupka, A. Mitchell, and N. Johnson.—p. 83.
* Studies of reproduction in rats using large doses of vitamin B_{12} and highly purified soybean proteins. L. R. Richardson and R. Brock.—p. 135.

Amino Acid Requirements. The general plan and methods of studies to determine the quantitative requirements of young women for the amino acids threonine, valine, tryptophan, phenylalanine, and leucine have been described. For the study of each amino acid there was an experimental period of six to seven weeks when a semi-purified diet was used. This included a few foods low in nitrogen, mineral and vitamin supplements, and chemically pure amino acids in the L form (except for DL-isoleucine). The intake of the amino acid being measured was reduced stepwise until negative nitrogen balance resulted. Usually the intake was then increased until nitrogen equilibrium was established. Nitrogen equilibrium was defined as the zone in which the excretion of nitrogen was within 95 to 105 per cent of the intake, rather than a point at which excretion and intake were numerically equal. The smallest intake of an amino acid which permitted all of the subjects to remain in nitrogen equilibrium was considered the minimum requirement. After the minimum requirement of each of these amino acids had been determined separately, its adequacy was tested in the presence of minimum amounts of the other four amino acids. The results with respect to threonine are reported also. The first group of six subjects was studied on several different intakes of threonine. A daily intake of 214 mg. of threonine was sufficient to maintain two subjects in nitrogen equilibrium and 103 mg. was sufficient for two other subjects. However, in a second group of five subjects who were on an intake of 214 mg. threonine daily, two were in negative balance. A third group of eight additional subjects was then used to test the adequacy of 214 mg. threonine for maintaining nitrogen equilibrium when valine, tryptophan, phenylalanine, and leucine were in the ration also in the minimum amounts. Six of these subjects remained in equilibrium; the other two subjects were in negative balance until their intakes of threonine were increased to 305 mg. daily. The smallest intake of threonine which permitted all of the subjects to be in nitrogen equilibrium was 305 mg. daily. The amount of 310 mg. is suggested as a tentative minimum daily requirement of normal young women similar to those studied here.

Valine Requirements. The valine requirement of seven young women was studied by using a semi-purified diet, reducing the intake of L-valine stepwise from 1560 to 465 to 375 mg. and then increasing it to 650 mg. daily, and measuring nitrogen balance. All subjects were in nitrogen equilibrium, which is defined as the excretion being within 95 to 105 per cent of the intake, or were storing nitrogen on a daily intake of 650 mg. of valine. When the intake was reduced to 465 mg. daily only four of the seven subjects were in equilibrium, and when it was further reduced to 375 mg., the subjects were either in negative balance or showed symptoms which may have been a result of an animo acid deficiency. In a later study, eight other subjects maintained nitrogen equilibrium on an intake of 650 mg. of valine when threonine, tryptophan, phenylalanine, and leucine were also present in the semi-purified diet in similarly established minimum amounts. The lowest daily intake of valine which maintained all of

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the subjects in the zone of nitrogen equilibrium was 650 mg. This amount is suggested as the minimum daily requirement of valine for young women similar to those studied here.

Diet and Reproduction in Rats. Two studies are described concerning reproduction in rats with the use of purified diets. One is the effect of large doses of vitamin B_{12} on the survival of young, and the other is the effect of different protein concentrates, including highly purified soybean protein on reproduction. When vitamin B_{12} was added, the number of young weaned ranged from 90 to 100 per cent regardless of whether the amount added was 10, 25, 500, or 1000 mcg. per kilogram diet. There was no evidence that large doses of vitamin B_{12} in the diet of the mother were toxic to the offspring. Without vitamin B_{12}, the average weaning weight and the percentage of litters and of young weaned were less than with vitamin B_{12}. Two commercial soybean proteins were exhaustively extracted with boiling water and with boiling 70 per cent isopropyl alcohol. Five generations of females which received a synthetic diet that contained these purified proteins weaned 90 per cent or more of their young. These data show that the diet was not deficient in an unidentified factor or factors required for reproduction and lactation in rats, and it is concluded that if unidentified factors are required for reproduction in rats, they are held very tenaciously to the protein concentrates.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 254, February, 1956

- Quadriplegia, hypopotassemia, and hyperchloremic acidosis after bilateral ureterosigmoidostomy. J. F. Loughlin.—p. 329.
- Prison camps—dead line in nutrition. Editorial. —p. 341.

Hypopotassemia after Bilateral Ureterosigmoidostomy. The occurrence of hyperchloremic acidosis after bilateral ureterosigmoidostomy has been reported frequently and has caused much medical interest and many changes in surgical techniques. The underlying physiologic features that account for this picture center around two general concepts. The first concerns intestinal absorption of urinary constituents and selective absorption of chloride, sodium and chloride as sodium chloride and ammonium and chloride; and the second, abnormalities in function of the renal tubules. Hypopotassemia in these cases appears to be due to a combination of deficient potassium intake and potassium loss by vomiting, forcing of fluids, and urinary excretion in association with chronic renal disease. In addition, other investigators have described renal acidosis with "tubular insufficiency with glomerular insufficiency" in which potassium as a base was excreted in excess in the urine because of inability of the kidneys to make ammonia and excrete an acid urine, and with sufficient potassium loss, weakness, and muscular paralysis. In the case of quadriplegia presented here, the serum potassium determinations were moderately low for four months after clinical recovery until one ureter was brought out to the skin. In a review of this case and similar cases reported in the literature a definite trend in treatment response was noted. Clinical improvement occurred first and was followed by improvement in the electrocardiographic picture, and lastly by a rise of the serum potassium to normal levels. No quantitative relation between the degree of muscle paralysis because of hypopotassemia and the electrocardiographic findings was demonstrated.

Prison Camps—Dead Line in Nutrition. At Andersonville, which is in the news again after eighty years, at Buchenwald, and at the prison camps of North Korea, a deadline in malnutrition has been repeatedly demonstrated. Some idea of the diet in Korea may be appreciated from the Thanksgiving meal of 1950: for each man a millet-ball weighing less than 200 gm. and soup prepared by boiling in water nine heads of cabbage per 500 men. Deficiency diseases and death by harrassment of the enemy was, of course, also the experience encountered at Buchenwald, Belsen, and Dachau a few years earlier and many years earlier in the Civil War camps, especially toward the end of that war. Doubtless untold millions have languished to death in the course of centuries of fighting. To physicians accustomed to thinking of prison miseries solely as purposeful atrocities of the enemy, it may be more profitable to contemplate the matter with an eye to prevention than to dwell descriptively on a tortured phenomenon that is as old as captivity. The one constructive thing that might be done by people powerless to influence an enemy's motivation would be to give their own foot soldiers a few hours' indoctrination on nutrition and survival similar to that given pilots who may be forced down at sea. It is largely ignorance of basic dietary facts that made both victor and vanquished pay such grisly prices for the doubtful success of capturing each other's troops in battle. And yet one small yeast cake and some dandelion seed would have sufficed to maintain the general health of many who died. The cells of a single yeast cake might be cultured into a never-ending supply of vitamin B components, and the leaves of the lowly dandelion made into a tea to supply ascorbic acid in abundance.

NUTRITION REVIEWS

Vol. 14, March, 1956

- Lathyrism and odoratism. F. M. Strong.—p. 65.
- Mechanism of weight loss by amphetamine.—p. 71.
- Vitamin B_{12} deficiency in vegetarians.—p. 73.
- Nutrition in gastric surgery.—p. 86.
- Caloric restriction and hair growth.—p. 90.
- Fasting, oxygen poisoning and radiation injury. —p. 90.

Lathyrism and Odoratism. Lathyrism in man is a type of paralysis induced by long consumption of lathyrus peas. These legumes are habitually eaten by large populations in India, Algeria, and less commonly in France, Italy, Spain, and other countries. Odoratism is an illness affecting the mesenchymal tissues and is caused by a specific chemical compound isolated from another kind of lathyrus peas, *L. odoratus*. Explanations for lathyrism have been unsuccessfully attempted. Human lathyrism is associated with consumption of lathyrus species that are completely nontoxic to rats, and the symptoms differ greatly from those of the odoratus syndrome found in experiments with rats. The experiments have led to the isolation of a compound, beta-aminopropionitrile (BAPN), from *L. odoratus* which causes pathologic changes in the mesenchymal tissues in higher animals. This information will be very helpful in studying the degenerativt diseases in humans since it is the firss time that an agent producing such effecte has been available.

Mechanism of Weight Loss by Amphetamine. The use of sympathomimetic drugs as appetite depressants began when physicians noted weight reduction as a side effect in patients undergoing amphetamine treatment. Although clinicians have used it primarily for weight control, other sympathomimetics have been reported as effective. In attempts to explain appetite-depressing actions, the following mechanisms have been suggested: increased basal metabolism, increased general metabolism, diuresis, incomplete digestion or absorption, and reduced food intake from appetite reduction.

Vitamin B_{12} Deficiency in Vegetarians. Vegetarians are usually classified as lacto-ovo-vegetarians or pure vegetarians (vegans). The vegans exclude all foods of animal origin from their diets. Several studies indicate that vegetarianism is essentially harmless, but in a study with British vegans adverse effects were found. The study included a larger number of children than did the previous studies done in the U. S., pointing out that vitamin B_{12} deficiency was found in the British studies since children appear to be more susceptible to that deficiency than adults. The deficiency symptoms in vegans, it is reported, could be alleviated by administration of vitamin B_{12}.

Nutrition in Gastric Surgery. One of the complications occasionally seen in peptic ulcer patients treated surgically is loss of weight in early postoperative months and inability to gain weight thereafter. It appears to be related to the nutritional status at the time of operation and also to the type of surgical procedure performed. In general, postoperative malnutrition is most prominent in those who have had the largest amount of stomach removed. Impaired digestion of fats and protein have been described. Studies have been made with dogs giving information of gastrointestinal function especially in relation to fecal fat and nitrogen excretions. Clinical confirmations are required.

Caloric Restriction and Hair Growth. The importance of the nutri-

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tional state of the animal in supporting skin and hair growth is emphasized in these investigations. The most severe depression of hair growth was seen in the pair of mice placed on caloric restriction on the day the hairs were removed. Hair growth of mice placed on caloric restriction at intervals after the hair had been plucked showed retarded growth which was not nearly as severe. The importance of the fat cells of the skin in supporting the growth of the follicle and the importance of the state of the follicle in supporting hair growth was illustrated.

Fasting, Oxygen Poisoning, and Radiation Injury. The similarities of oxygen poisoning and radiation injury are pointed out in this report. Mice were subjected to 8800 roentgens of x-irradiation and to 6 atmospheres of oxygen during irradiation, and at 2 min., 30 min., and 5 hr. after irradiation. Synergism of the oxygen poisoning and radiation injury was indicated. As time intervals between the irradiation and oxygen treatment increased to 5 hr., however, the synergistic effect disappeared, and at intervals greater than 5 hr. some protection against oxygen poisoning was noted. Suspicion that the effect of irradiation was due to postirradiation anorexia, since it had been reported that long fasts protect animals against oxygen poisoning, appeared. Fasting, irradiation, and fasting plus irradiation treatments were taken to prove the suspicion, and it was correct. It is suggested that if oxygen poisoning and irradiation injury are actually similar, starvation might also show a protective action for irradiation.

PUBLIC HEALTH REPORTS

Vol. 71, February, 1956

* Cardiovascular diseases and public health. J. W. Ferree.—p. 115.
* Unfinished business in maternal and child nutrition. M. M. Heseltine.—p. 139.

Cardiovascular Diseases and Public Health. The organizations working together in the effort to further research, community service, and education in the cardiovascular diseases are described. The problems of overweight and diet have occupied the attention of many local heart associations. A number of heart associations, working with their health department, have organized weight-control groups, and several have given low-sodium-diet cooking classes. On the national level, the American Heart Association, in cooperation with the Council on Foods and Nutrition of the American Medical Association and the Food and Nutrition Board of the National Research Council, developed recommendations for more precise labeling of the sodium content of special dietary food products, which were incorporated in 1954 in the official regulations by the Food and Drug Administration. Although neither the American Heart Association nor its branches approve or disapprove of specified dietary food products, local heart associations should be able to refer patients to sources of dietetic foods in the community.

Unfinished Business in Maternal and Child Nutrition. Progress in recent years makes it possible to talk now about unfinished business in maternal and child nutrition. Even though we lack precise measures of nutritional status, few people doubt that mothers and children, on the average, are in better nutritional condition today than they were twenty years ago. But the very size of our accomplishments makes it necessary to emphasize the unfinished business. This nation is growing younger faster than it is growing older. During the preceding decade, the population over sixty-five years of age had increased 37 per cent but the population under five had grown by 55 per cent. Because of improved maternal care, the four-million babies that are born annually may be spared many of the hazards of delivery and early infancy. Their birth certificates carry no guarantee that they will receive the daily dietary allowances recommended by the National Research Council. Public health nutrition services should be directed toward the older age groups, but programs should continue to service maternal and child health as well. Generalized undernutrition can still be found among children in the U. S., and even cases of dietary deficiency disease are seen occasionally from cultural groups that have not shared in the widespread economic prosperity. We need to know more about the matter of nutritional requirements of optimal health at all stages of development. We need to know more about satisfactory rates of growth in children. If infants are not expected to grow at even more rapid rates, there may be some revision in our ideas about the time for introduction of solid foods into the diet. Still another aspect of maternal and child nutrition about which we need to know much more is the relation of nutrition to healthy teeth and to their resistance to caries. It seems to be well established that the development of structurally sound teeth is dependent on a supply of nutrients that have their source in the ingested food. We need to know more about the relationship of diet preceding and during pregnancy to the well-being of the mother and infant. Teams of research workers in various medical centers have approached the study of nutrition during pregnancy quite differently and, as might be expected, have often failed to confirm each other's findings. The unfinished business in maternal and child nutrition is to a large extent the business of all public health workers.

TEXAS STATE JOURNAL OF MEDICINE

Vol. 52, February, 1956

* Inadequate weight gain in pregnancy. J. T. Downs, III and S. A. Alexander.—p. 74.

Inadequate Weight Gain in Pregnancy. In this study, 1153 private patients of the middle income group on adequate diets, none of which was below 1000 calories per day, were observed. All were given vitamin and mineral supplements in the last twenty weeks of pregnancy, and those with a poor nutritional status as evidenced by weight or hemoglobin values were given supplements as soon as possible in the first trimester of pregnancy. Sixty-seven patients failed to gain at least 10 lb. Patients initially overweight were not affected by failure to gain, and those who were normal or less in initial weight had a statistically significant increase in premature separation, smaller babies, prematurity, and fetal deaths. The nature of poor nutrition in the group is difficult to explain as they were on supposedly good diets and with the usual dietary supplements.

AMERICAN RESTAURANT MAGAZINE

Vol. 40, March, 1956

* What are your policies on feeding restaurant employees?—p. 62.

Feeding Restaurant Employees. The majority of restaurateurs participating in a poll on food policies concerning their employees reported that they provide meals free of charge though with certain restrictions in most cases: no steaks; choice of lower-priced items only; fancy dishes at cost, or steaks at 50 cents; special dish only; limit of 85 cents on each meal; 50 cents a day allowance; limit on each meal of 70 cents (breakfast), 85 cents (luncheon), and $1.35 (dinner); and so on. A smaller percentage reported that they provide meals at cost, or at a discount (25 to 50 per cent of retail price) or, in one case, allow 40 cents budget charge per meal. Others are allowed 25 to 50 cents per day for meals. Some employees are fed free of charge and 25 cents per meal is added to gross pay for tax purposes. One restaurateur charges employees $5.00 per week, although this is mainly a bookkeeping problem to figure withholding tax. Only a few allowed employees full choice on the menu; only a few charged employees full retail price. Over half of the restaurateurs allow employees to eat on company time. Employees in almost all cases appeared satisfied with present policies.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 30, March, 1956

* Efficient food service requires step-by-step planning. E. A. Jones.—p. 53.

Food Service Planning. There are six steps to realistic food service planning. The first of these is to determine the function and responsibilities of the operation. Second, list the procedures necessary to carry out these functions, such as: menu planning; food purchasing; adequate food cost accounting system; food preparation; food service to customers; food service to employees; effective dishwashing; effective food waste disposal; care and maintenance of equipment; maintenance of high standards of sanitation. Three, select methods for the maintenance and care most practical to accomplish the described operation. Determine the work station, floor space, and equipment needed to perform these functions. Four, list all pertinent data about the total food service operation before plans for work units can be made. This will serve as a guide to proper

Meat...

and the Rehabilitation of Protein Depleted Patients

Although the recommended daily allowance of one gram of protein per kilogram of body weight is adequate for the average healthy adult,[1] greater amounts may be needed in the rehabilitation of patients depleted in protein after severe infections, mechanical trauma, burns, or extensive surgery.[2] Protein needs for tissue regeneration during convalescence are high.

To speed rehabilitation of the protein depleted patient, top quality protein and calories should be given in generous quantity.[2] However, a high protein intake, 130 grams daily, at best induces a slow response.[3] Intakes at 3 or 4 times that level may produce considerably more rapid gain in weight, strength, and morale.[4,5] If mastication and swallowing are difficult, canned strained meats—such as used in infant feeding—may be used to advantage in the high protein diet.[2]

Lean meat, outstanding in contained top quality protein, may well be made the keystone of the high protein diet. Its abundance of vitamin B complex and essential minerals—iron, phosphorus, potassium, and magnesium—adds to its therapeutic value. Important also are its appetite appeal, its easy digestibility, and its virtual freedom from allergenic properties.

1. Recommended Dietary Allowances, Washington, D. C., National Academy of Sciences—National Research Council, Publication 302, 1953.
2. Co Tui: Review: The Fundamentals of Clinical Proteinology, J. Clin. Nutrition *1*:232 (Mar.-Apr.) 1953.
3. Keys, A.; Brozek, J.; Henschel, A.; Mickelsen, O., and Taylor, H. L.: The Biology of Human Starvation, Minneapolis, Univ. of Minnesota Press, 1950.
4. Burger, G.C.E.; Drummond, J.C., and Sandstead, H.R.: Malnutrition and Starvation in Western Netherlands, The Hague General State Printing Office, 1948, Part II, p. 91.
5. Co Tui; Kuo, N.H.; Chuachiaco, M., and Mulholland, J.H.: The Protein Depletion (Hypoproteinia) Syndrome and Its Response to Hyper-Proteinization, Anesth. & Analg. *28*:1 (Jan.-Feb.) 1949.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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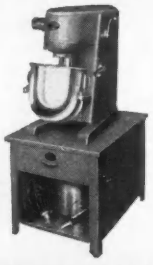

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size and shape of rooms and work stations and will be used by those who operate the department later. Step five requires a specific plan of work flow in each unit as well as the department as a whole. A diagram showing units essential to the efficient operation of a main kitchen is necessary. Six, select equipment for each operation. But before purchasing, set a list of standards for each unit. In the receiving area, for example, to determine what size scale will be necessary, the unit of measure might be the size and quantity of potatoes to be received. In addition to selecting the unit of measure to determine size, the type of operation involved must also be considered. Having effectively planned the food service operation, the job is not complete if the plan is not reviewed. First, locate a check list to be used in evaluating food service layouts. Prepare a typical menu in the kitchen to check traffic lines. Review the use of equipment as planned by charting several typical menus. List all equipment to be stored in the area in which used and check on storage space. Check the entire program to see if it meets the highest standards of food sanitation. Check the staffing needs to eliminate excess costs.

FOOD ENGINEERING

Vol. 28, March, 1956

- Europe accepts food in tubes. D. N. Lewin.—p. 60.
- Dietetic foods—their status and how to make them. J. J. Alikonis.—p. 92.

Food in Metal Tubes. Refrigeration in European homes is comparatively limited and Europeans buy food for the day or even for the next meal. Thus the large variety of food packaged in collapsible metal tubes has found general acceptance, and the advantage of the small tube (2 to 4 oz. generally) and its protection against oxidation through tight reclosure and little or no headspace is readily apparent. Meat products, fish products, meat and fish combined with mayonnaise, mustard, horseradish, gravies, and sauces have been successfully marketed in tubes. Tube-packed dairy products include spreads of soft and semi-soft cheeses, tubes filled with evaporated milk, sweet cream, sour cream, cream cheese, and so on. Sirups and sweetenings, including chocolate sirups and a variety of icings, represent the confectionery field. Similar products include fruit and berry sauces and jellies. Switzerland and France supply mayonnaise, mustard dressings, sauces, and gravies to the European market. Italy offers tomato products, pastes, and sauces. Even seasonings and condiments prepared in paste consistency, and liquid coffee, too, have been successfully marketed in metal collapsible tubes in Europe. There is growing interest in this type of packaging here and experiments on a coating material now being processed show that it can be considered satisfactory for collapsible tubes for many foods. Further efforts should enable the manufacturer to perfect the material and to make it proper for any food-in-tube package.

Dietetic Foods. A number of low-calorie foods are now being marketed to a limited extent. Sorbitol or artificial sweeteners are used in soft drinks in place of sugar. Strictly speaking, the beverages are not low in calories, but are advertised with the notation, "no sugar," meaning cane sugar, to convey a psychologic effect. Low-calorie puddings are of the cooking (not instant) type. Sugar is replaced with Sucaryl or saccharin. As a gelling agent, Irish moss is used. Salad dressings of the vinegar-oil types are sold as low-calorie foods, with gums providing the thickening. As with carbonated beverages, low *p*H's hydrolyze the gums including pectins. With jams and jellies, low-methoxyl pectin, Irish moss extract, agar, or guar gum are employed as gelling agents. All or part of the sugar is replaced with Sucaryl or saccharin sweeteners. An imitation maple sirup contains a mixture of sorbitol, mannitol, and imitation flavor. Cake mixes are also on the market which are shortening-free. All other ingredients are the same as in regular mixes except for emulsifiers, which must be added in increased amounts, varying with each type of cake. Aerated products, such as marshmallows, nougats, and frappés, which are actually low-calorie confections are available. It is not possible to make low-calorie confections in which such materials as saccharin and Sucaryl are substituted for sugar. There is also a legal clause which states that a non-nutritive substance, with a few exceptions, cannot be used in candies. Directions for making a high-protein low-calorie frappé are given, as well as typical candy formulations which will be of interest to confectioners aiming at diabetic patients.

HOSPITAL PROGRESS

Vol. 37, February, 1956 (Part 1)

- Education and the dietitian. Sister M. Carola.—p. 77.

Education and the Dietitian. In order to give the best possible service to humanity, the dietitian must continue to be a student all her life and keep abreast of all advances in the field of dietetics. In her administrative capacity, she directs one of the major departments in the organization. She is in the position to speed the progress of nutrition. The educational function of the dietitian not only includes the teaching of the dietetic intern and student nurse, but extends to medical and dental students, all personnel of the hospital, patients, and the public at large. The dietitian should be looked to as an authority in her field, but if she does not keep up with all the new developments in nutrition, research administration, personnel management, and other areas, she cannot be considered so. How is she going to keep herself informed? She will find much help in her professional journal. The reference library of her own institution should give further help. Salesmen and other company representatives are able to furnish her with valuable information. The administrators of hospitals and other institutions should encourage their dietitians to attend meetings of national, state, and local associations because such meetings

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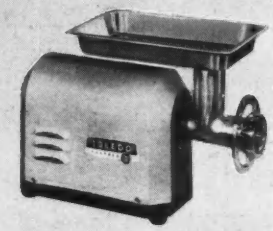
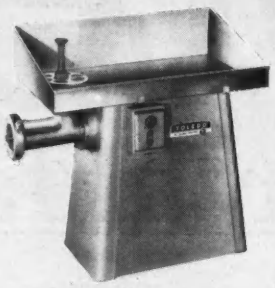
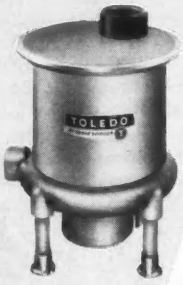
NEW ...MORE TOLEDOS TO SERVE YOU BETTER





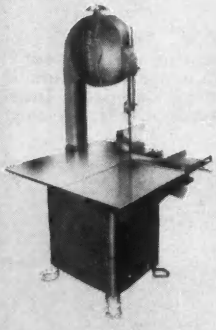
New TOLEDO CHOPPERS

Announcing—a new, complete line of speedy, efficient Toledo Choppers in full range of models from ⅓ HP to 7½ HP . . . and on up to 25 HP. Designed and built for rugged, heavy-duty service. Trouble-free, smartly modern in appearance. Roller bearing thrust. Plates are of flat side design for positive positioning. Models illustrated are the Toledo Model 5125 ⅓ HP, and the Model 5520 5 HP.



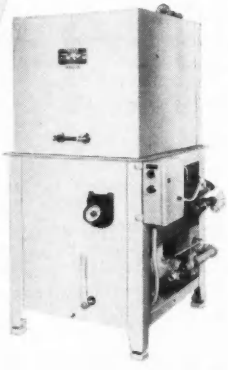
New TOLEDO DISPOSERS

Announcing—new Toledo Hi-Speed Disposers in big, heavy-duty sizes for restaurant and institutional use. 3 HP and 5 HP models built to banish food wastes the modern way. Fast, easy, sanitary; shred all food wastes and flush down drain before they become garbage. Exclusive "Centri-flo" action. Also available are the widely used ½ HP Toledo Disposers adaptable to a variety of installations.



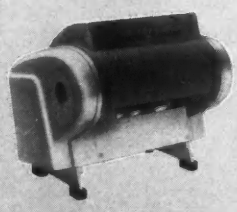
NEW TOLEDO SAW

Hi-Speed Model 5300. Speeds up production. Has extra large working area, rugged dependability. Big capacity, 16 inch wheels. Blade speed 3,000 ft. per min. Tension gauge at eye level. Clean operation, maximum cleaning ease.



Wider choice in top DISHWASHING efficiency

29 models for modern restaurant needs! Performance-proved Toledo Dishwashers offered in compact counter models, door-type and conveyor pre-wash machines. Sizes and capacities from 450 dishes per hour (counter dishwasher) . . . up to heavy-duty three-tank machines averaging 12,600 dishes per hour.



NEW TOLEDO STEAK MACHINE

Hi-Speed Model 5251, produces those tempting and tender steaks at a 40% faster production rate. New big capacity. Also provides additional operating clearance for maximum operating ease and speed.

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Slicers • Choppers • Steak Machines

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are planned to keep the dietitian well informed concerning new developments and trends. Staff meetings also keep the dietitian informed and with a large staff there are many opportunities to share ideas. More experienced staff members can be extremely helpful in giving the younger ones guidance when necessary. Most dietitians find some time to read, but it is impossible to crowd all the excellent articles published into an already overburdened schedule. Assigning staff members oral reviews of some of these valuable articles will insure that some of the information comes before the entire staff.

HOSPITALS

Vol. 30, February 16, 1956

* You don't need a permit to hunt for hidden costs. V. W. Godlesky.—p. 66.
* Don't overlook the three P's: Prepackaged, preportioned, pre-prepared. H. Becker.—p. 77.

Vol. 30, March 1, 1956

* You can be your own efficiency expert. C. K. Kemler.—p. 33.
* The hospital diet manual. F. Low.—p. 51.

Vol. 30, March 16, 1956

* Our remodeling program paid dividends. M. E. Kalsem.—p. 92.

Hunting Hidden Costs. Items purchased for a dietary department should be checked carefully to eliminate features which add to cost but do not contribute to utility. Should silverware be name-stamped if this is an additional expense, or used, if stainless steel is acceptable at a lower cost? Should packaged goods be bought if bulk goods can be handled conveniently and used at a lower cost? Plastics, nylons, and other synthetics should be considered as substitutes for china and glassware. Paper products are useful but over an extended period of time may result in higher costs. A product is usually satisfactory if it is suitable for an intended purpose and if price considerations are evaluated in terms of the following factors: (a) The quality and quantity of the goods must be suited to the hospital's needs. (b) Delivery of the product should be assured. (c) The supplier should be reliable and able to provide a continuing supply of the product, if necessary. Competitive bidding is one of the most satisfactory means to obtain low ultimate cost for quality merchandise. Before placing orders ask yourself: (a) What is the specific intended use of the item to be purchased? (b) Is there anything better available for this use? (c) Can a standard product be found which will be usable? (d) Does the product need all the features you are paying for? (e) Is its cost proportionate to its usefulness? (f) Will another dependable supplier provide it at a more reasonable price? (g) Are neighboring hospitals buying the product for less?

The Three P's. Pre-prepared, preportioned, and prepackaged items are boons to hospitals which suffer shortage of food service personnel. Prepackaged foods expedite food distribution within the hospital food service; insure fresh, uncontaminated food for the patient; and eliminate distribution of bulk foods to the nursing divisions. Individually packaged products give the dietitian an

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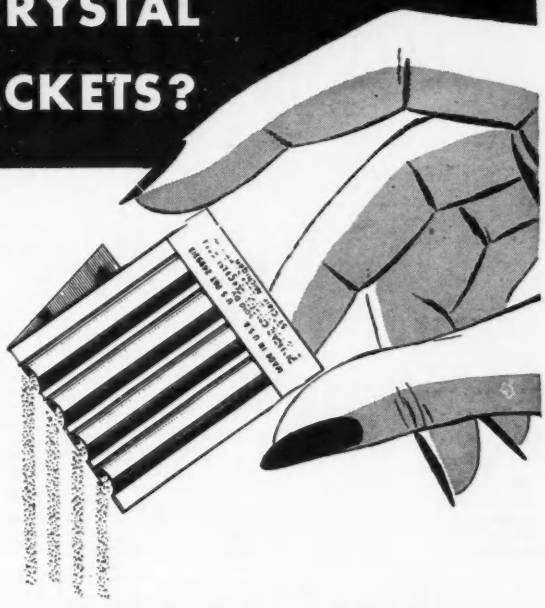

Fill in the coupon below and send for your sample right away!

See for yourself how Diamond Crystal Salt and Pepper Packets can streamline your seasoning service . . . and help make your mealtime operation more efficient!

DIETITIANS SAY THAT PACKETS:

- Prevent cross-infection because they are used by only one person and then thrown away!
- Save time and labor! Eliminate washing, filling and constant handling!
- Speed up service and simplify tray preparation!
- Eliminate breakage and pilferage!
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Packets contain New Weather-pruf Salt which stays free-flowing even in wet or humid weather!

Each Packet contains enough salt and pepper for a complete meal!

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Send for FREE SAMPLE today.

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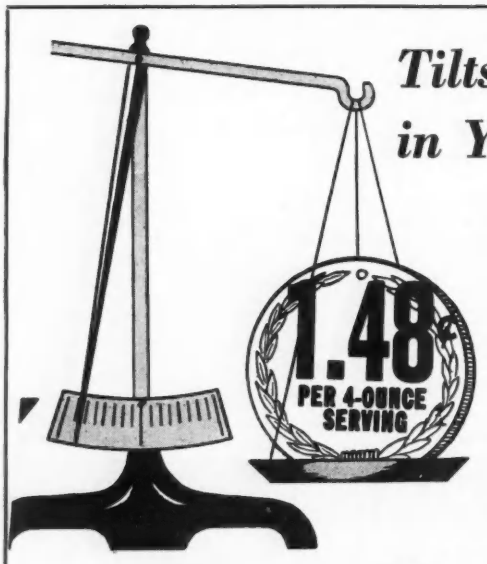

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opportunity to purchase skilled labor, supervision, and a quality product from the food processor. The use of preportioned meats and fish products depends on the raw food, labor, and distribution costs, and the waste. One study of the yields and costs of beef carcass and wholesale cuts versus proper prefabricated substitutes has shown that the raw cost of a beef carcass or wholesale cuts is higher than the prefabricated substitutes which include labor costs. Another item worthy of consideration is boned and rolled turkey processed in approximately 24 min. by a butcher. A study has shown that a turkey roll in casing, cooked in moist heat, has a 30 per cent greater portion yield, a lower cooking temperature, shorter cooking period, and is as full of good flavor as the same size aluminum, foil-wrapped turkey roll roasted in dry heat. Of the pre-prepared fruit items now available, pre-prepared orange and grapefruit sections are of particular interest. A recent study has indicated that 1 gal. commercially pre-prepared orange sections is 99 cents cheaper than the total direct cost (raw food and labor) of 1 gal. oranges sectioned in the hospital kitchen.

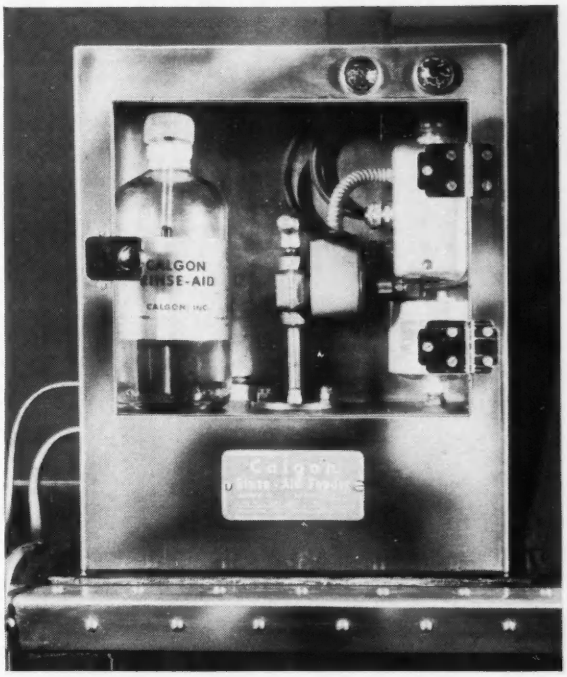
Efficiency Expert. A "time and motion" study was undertaken by a hospital dietary department to uncover inefficient operations. Armed with a stopwatch, the author timed kitchen operations, drew work flow diagrams, and established what was felt to be a normal length of time in which all these jobs should be done. It was found that tray girls were wasting time by setting up trays in advance instead of placing them directly onto the conveyor belt. It was also determined that 30 min. per day could be saved if bread was placed on plates at the time the serving plate was received instead of placing the bread on the plates in advance. Also, the bread reached the patient in a fresher condition. Other innovations included a switch from homemade cakes to packaged cake mixes. New quick frostings were developed. Canned chicken fricassee was purchased for chicken pie, chicken and noodles, and other chicken dishes. It was decided to purchase quality canned and frozen vegetables and fruits and to limit the use of fresh vegetables to salads. The use of instant mashed potatoes is in the experimental stages. New spun glass tray covers imbedded in the trays were purchased. Silver is no longer wrapped in a napkin for ease in handling. A diet manual has been set up and copies are filed in the dietary office so that dietary personnel can start a patient on a diet if the dietitian is not available. An old storeroom has been converted into a walk-in freezer unit. The operating expenses of the department have been reduced by $300 per month by implementing these new procedures.

Hospital Diet Manual. In revising an existing diet manual, source material was gathered from recently revised manuals of well-established dietary departments, revised textbooks, and periodicals. A special committee composed of members of the medical staff and of the dietary department prepared the manual. The number of diets included in the

Perfect dishwashing

SPOTLESS AND INSTANTLY DRY with Rinse-Aid

Truly spotless dishwashing is now possible with new Calgon® Rinse-Aid and the Calgon® Rinse-Aid Feeder. Rinse-Aid solution breaks the surface tension of water, makes it drain away in sheets. No drops are left behind to dry into spots and streaks. All dishware, including plastic, comes out of the dishmachine sparkling clean and ready to use.



RINSE-AID feeder is small (6" x 12" x 14") and easy to install. Signal lights show when power is on and when dispenser is actually operating. Note visibility of Rinse-Aid bottle—you can keep close check on concentrate level.

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LOW FIRST COST—ONLY $179.50, delivered. Rinse-Aid dispenser is small and easy to install wherever convenient.

LOW USE COST — The Rinse-Aid Feeder meters concentrated solution in exact proportion to the flow of rinse water—never too much or too little.

LOW MAINTENANCE COST — The Rinse-Aid Feeder is completely automatic and works on an entirely new principle—*there are no pumps to get out of order.* Rinse-Aid solution is ready to use—there's no need to fuss with mixing or diluting the solution.

LOWERED OPERATING COSTS—With Rinse-Aid there is no need for toweling, no need for special dips or rinses—you save on handling costs, and with less handling—there is less breakage—you save again.

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Rinse-Aid is approved by leading health authorities

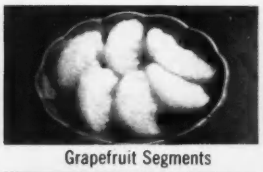
COMPARE THE PACK

See which gives you fresher flavor... mo

Compare these Heinz fruits or vegetables agains

Apricot Halves

Fruit Cocktail


Grapefruit Segments

Bartlett Pear Halves

Cling Peach Halves

Apple Sauce

Freestone Elberta Peach Halves

Freestone Elberta Peach Slices

Fancy Hawaiian Pineapple Tidbits

Fancy Hawaiian Sliced Pine

Sliced Carrots

Diced Carrots

Whole Kernel Corn

Cream Style Corn

Lima Beans

Sweet Peas

Whole Beets

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Spinach

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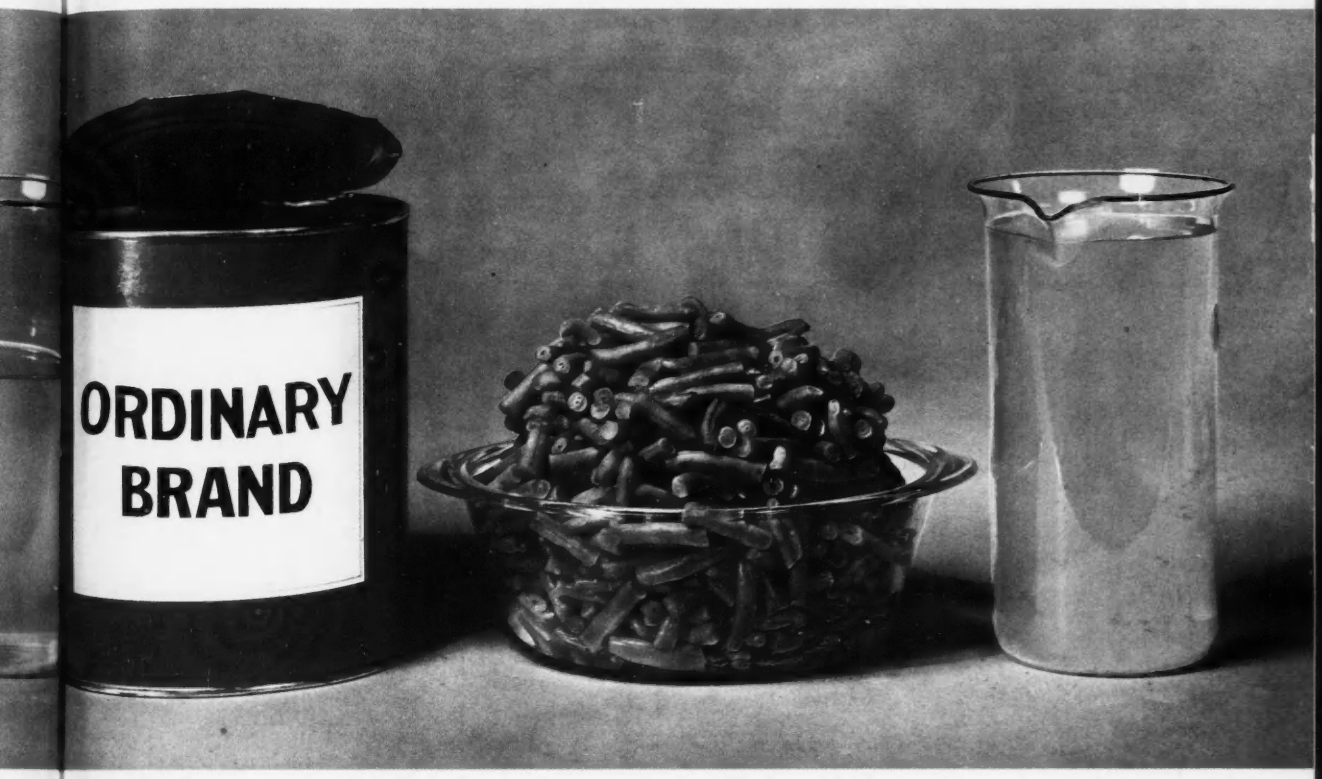

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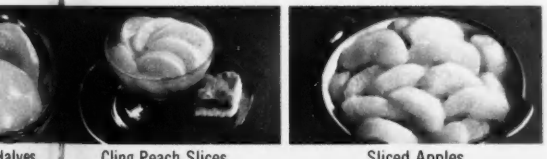

Halves | Cling Peach Slices | Sliced Apples

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57

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We're taking this way to prove to you that Heinz fruits and vegetables are a better buy than other brands, canned *or* frozen. Here's why:

More appetite appeal. Fresh flavor, color, texture.

More solid pack. More servings per tin.

Every tin the same. It's all pick-of-the-pack.

See, measure and taste for yourself. Fill in and mail the coupon. We'll rush you a *free* #10 tin of whatever Heinz fruit or vegetable you choose. It takes only one minute to compare—and you'll agree that your best buy in fruits and vegetables is Heinz!

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Send me FREE Heinz tin so I can compare it
with other brands. I want to test _____
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manual was limited intentionally. With minor changes and modifications, those listed could be used as a basis for any diet needed. The diets included were the general, soft, liquid, infant, pediatric, progressive bland, high-calorie, low-calorie, diabetic, low-fat and/or low-cholesterol, and restricted sodium chloride. Diets for pregnancy, lactation, and geriatries were also included. To simplify the writing of the diets, it was decided that every diet was to be complete, except in a few instances where it was so stated. Each diet lists the essential foods to be included daily in household measures; foods allowed; foods to be avoided; food lists and special instruction; a menu pattern and sample menu. Nutritional values of the main items of the key diets are presented in chart form. All diets except the diabetic were listed as modifications of the normal or general diet. There is a brief description of each diet and two pages are devoted to the essentials of good nutrition.

Remodeling Program. Chicago's Cook County Hospital has achieved better quality, quantity, and cost control through centralization of food production. The main kitchen features a central unit for production of food for all patients except children. Beyond the overhead cooks' area, electrical outlets heat a maximum of 55 bulk food conveyors. The new layout treats kitchen and storeroom facilities as a coordinated unit. Dry and cold storage facilities, garbage room and vegetable preparation units are located at the back of the kitchen next to the storeroom. Commodities are unloaded and stored near where they are needed. There is no separate therapeutic diet kitchen but there is a separate room for beverage production—a major factor in the therapeutic diet. There is a small separate test kitchen for analyzing new food products or developing standardized recipes. One of the main features of the remodeled dietary department is the bakery located to the right of the kitchen. There all bakery products are prepared by automatic equipment. An automatic bread slicer and wrapper insures the delivery of a sanitary product to the patient. A dessert section, storeroom for small items, and pot and pan washing unit are also included. All equipment is stainless steel. Walls are of glazed, buff-colored ceramic tile and the ceiling is covered with an acoustical material. Recessed fluorescent lights insure good lighting in all areas. Future plans include the rebuilding of central refrigerated stores; a walk-in freezer unit to provide storage for increased use of frozen foods; installation of garbage disposal units in several production areas. All ward serving kitchens will be rebuilt, a program which is already under way.

Fast food service
DEPENDS ON fast toasting

Specify SAVORY Automatic Toasters For Fastest Toast Service at Lowest Cost

Gas or electric, a Savory toaster produces MORE toast in LESS time and at LESS cost than any other commercial toaster . . . can produce up to 12 slices per minute with no confusion, waste time, lost motion.

Savory means faster service — because it eliminates time-wasting bottlenecks at the toaster station. The only toaster using the continuous conveyor system, it always has room for loading. Finished toast unloads automatically into the serving tray.

Because Savory controls the heat exactly it assures proper toasting, firm on the outside, warm and soft on the inside. No over-done, over-dry toast or buns.

Investigate Lowest Operating Costs!
The Savory toasters produce 6 to 12 slices of perfect toast per minute, require less than 2 square feet of space. For better toast—all you need even in peak demand periods without waiting — and at lowest cost — investigate Savory.

Savory EQUIPMENT, INCORPORATED
120 PACIFIC ST., NEWARK, N. J.

INSTITUTIONAL FEEDING AND HOUSING

Vol. 6, March, 1956

* Discover where and how food waste occurs. J. H. Emery.—p. 18.
* Four-point program builds volume and profit. C. Draper.—p. 22.
* How to control your food issue. A. N. Califano. —p. 24.
* Fire protection builds safety into your investment. —p. 36.

Food Waste. Before waste can be tracked down to the source, all items prepared for sale must have a standardized formula. The amount of food used must be totaled. Then the checks must be analyzed. Food, minus normal preparation loss, should equal the portions sold plus portions left over. A daily report of this kind brings to light the largest losses while the possible causes are fresh in everyone's mind. A second report on a weekly basis shows actual food cost compared to the figure set up as target. When a loss has been discovered, the source must next be found. It may be poor planning. It may be theft. It may be loss through careless handling of food. But once waste is discovered, it can be eliminated and each situation suggests its own answer.

Four-Point Program. An eastern hotel management has set up the following four-point program devised to build volume and profit: (a) Train personnel to operate within a prescribed policy. Make sure each worker knows what he is doing and why. (b) Set up a quality control system. Keep a book of formulas which includes recipes, preparation of all items, size and type of serving dishes, and so on. (c) Establish a positive system to eliminate waste. This should cover spoilage or left-overs from over-production; waste in purchasing, inventory, prepa-

"Enjoy new rewards as an Army Dietitian.....

A career so important, you start as an officer!"

"Yes, when you serve your country as an Army dietitian, you know that your life will be fuller, your career more complete. You know it because the Army makes you an officer—gives you the rank and prestige reserved for those with important jobs.

"It doesn't take long to find out just how important your job is. Working in a modern, well-equipped Army hospital, you'll soon feel the added satisfaction of playing your part to help your country as well as humanity.

"And with this greater responsibility come greater personal benefits, too. For one thing, you'll be surprised how your free rent, medical care and recreation allow you to save a tidy nest egg out of your officer's salary. You'll find it comes in mighty handy on that big 30-day paid vacation you get every year. And while you're waiting for your vacation to roll around, you'll enjoy the stimulating companionship of your fellow officers—professional men and women with interests just like yours.

"The Army really does offer you a fuller professional career, a more rewarding personal life. Why not send now for all the details on what an Army career can mean to you. You'll be glad you did."

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Washington 25, D. C.
Attn: Personnel Division

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Address_____

City_____ State_____

My present status is (check one)

STUDENT:
___High School
___College
___Dietitian

GRADUATE:
___College
___Dietitian

OTHER:

ARMY MEDICAL SPECIALIST CORPS — U. S. ARMY MEDICAL SERVICE

ration, service, labor, and other phases. (d) Merchandise the advantages of the operation. Sell customers the desire to return. Attract specialized groups. The manager of the hotel holds regular meetings with his staff. Bulletins are issued regularly to call attention to items that need remedial action. The staff holds regular training meetings with the employees to discuss new problems and to follow-up on previous sessions. A checklist showing the high standards expected of service at the hotel is displayed prominently for personnel to take notice.

Controlling Food Issue. The way you issue food from the storeroom can make or break inventory and cost accounting. Storeroom issue should be made only on written requisition. Items of direct issue such as those stored in refrigerators or on shelves where production employees can walk in and help themselves should be kept as low as possible. Do not carry direct charges over the end of the month but all such charges and spoilage for the month should be recorded during the inventory as food cost for the day. Meat, especially veal, constantly dehydrates and loses weight while hanging in the refrigerator. A two-section inventory tag solves the weight loss problem. When the meat arrives, a number tag listing date, clerk's name, and quantity, is fastened to each piece. The second section of the tag goes to the manager's office. When the piece of meat is sent to the production department, the tag is removed and sent to the office where the two parts are matched. This gives a perpetual inventory system for meat, regardless of shrinkage. Spoilage should be checked and listed on the inventory. This method spots any radical increases in spoilage, or equipment breakdown.

Fire Protection. Well-briefed personnel and an effective protection system are the best fire insurance. Have the right kind of extinguishing equipment when and where you need it. Supplement heavy equipment with a number of small, portable units placed at strategic points. Paint shelf and wall areas around the extinguishers bright red for quick identification. Small carbon dioxide extinguishers do an excellent job of quelling kitchen fires. Dry chemical (powder) extinguishers also are effective against all types of small fires. The new, aerosol-type dry chemical extinguishers are easy to handle. The more elaborate automatic detecting and extinguishing systems are designed to take the uncertainty out of fire fighting. A specific restaurant fire control system is sketched and described. It is a pressure-operated, carbon dioxide system which covers three separate cooking areas simultaneously. Three individual control units are interconnected to guard three different hazards: the main range area in the kitchen; a glass-and-brick enclosed charcoal broiler adjacent to the dining room; and a multi-tiered baking oven in the basement. This three-way device not only detects fire instantly but provides protection if a blaze breaks out in an inaccessible exhaust duct.

NEW MARKET FORGE METHOD OBSOLETES RANGE TOP COOKING 5 WAYS!

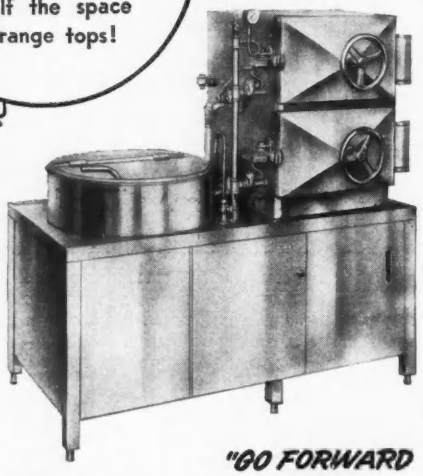
1. Faster! Cooks twice as fast with less shrinkage, less loss of food values.

2. Easier! Eliminates pot watching and pot washing. Less manpower needed!

3. Cheaper! No waste heat, small preheat time — saves 50% on fuel bills.

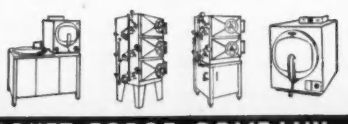
4. Smaller! Twice the work in half the space of range tops!

5. Better! Keeps natural color and flavor — cooks small quantities quick!



Model 2MK — 4 bushel capacity steam cooker and 40 gal. kettle with either a gas or electric boiler in the base. This combination provides the 5-way benefits of steam cooking plus exclusive kettle features including a lower working height, faster operation, complete safety against hot pipes and ease of cleaning. As a combination it saves greatly on space and requires only one set of connections.

Send today for detailed specs on this amazing new combination, and for the illustrated folder showing the complete MARKET FORGE line of steam cookers.



"GO FORWARD with MARKET FORGE"

MARKET FORGE COMPANY
EVERETT 49, MASS.
FOOD SERVICE DIVISION
EST. 1897

INSTITUTIONS

Vol. 38, March, 1956

* Planning a snack bar. M. Johnson and V. Walberg.—p. 9.
* 4-point personnel program. P. Dukas.—p. 34.
* How to walk, climb, work safely.—p. 131.
* Set responsibility for sanitation, maintenance. S. M. Hartt.—p. 146.
* Use detergent according to sink volume. R. H. Bacon.—p. 155.
Plentiful potatoes prove versatile.—p. 158.
* "Plates to please" pamphlet guides dishwashing crew.—p. 174.

Snack Bars. Snack bar-type of service has many advantages. There is continuity of patronage so that employees work profitably during all the hours of the day. The menu is limited to a few items which are all easily portion-controlled. Food and labor cost percentages are usually low. In addition, a manager takes quick stock of items on hand at any time of the day. Before planning a snack bar layout and buying equipment, select the menu you plan to use. Install the exact equipment needed to prepare and serve these items. Allow a generous amount of space for frozen food storage. If paper for serving fountain items is to be used, space must be allowed for containers to handle the bulky paper cups and dishes. Before purchasing a fountain unit containing a standard built-in sandwich board, it is best to have the operating plan well in mind to avoid an unsuitable location. Don't underestimate the requirements for coffee making—a good deal of grief is saved if

EASY NEW WAY TO

give good red meat a gravy it deserves!

Diners prefer gravies made rich and full of flavor with

Your gravy will have rich meaty flavor, as tasty as the good red meat itself, when you add Maggi® Granulated Beef Bouillon cubes to the gravy as it cooks. The flavor's enriched . . . natural . . . inviting!

Try it in your next gravy . . . it's easy to use, amazingly economical, a real customer pleaser. Try Maggi Granulated Bouillon for enhancing the flavor of vegetables, soups, and stews. It's versatile!

Ask About Maggi At Nestle Booth *D 124-26 at the Restaurant Show.

FREE

a generous supply of Maggi at our expense!

Send coupon today . . . we'll send you a 4 oz. jar of Maggi Granulated Beef Bouillon and the famous Maggi Recipe Booklet. Judge Maggi's value for yourself!

The Nestlé Company, Inc., Box No. A-80
Institutional Sales Dept., 2 William St.
White Plains, N. Y.

Please send me FREE, 4 oz. jar of Maggi Granulated Beef Bouillon Cubes and recipe booklet.

NAME .....

ADDRESS .....

CITY ..... STATE .....

an adequate coffee unit is installed. Self-service, when planned in advance, has much to recommend it and should be considered. The author lists all equipment needed to operate a snack bar serving 800 customers per day in a 12-hr. serving period. Data on snack bar menu planning are included also in this issue.

Personnel Program. Successful personnel management requires observance of four rules: (a) Know and always consider your objective before you act. (b) Control your reactions. (c) Direct your energy. (d) Persist until you succeed. The objective of effective personnel management is to get the job done through someone else, and done by certain performance standards. Once this objective has been defined and explained, it can be used as a framework upon which all energy, actions, decisions, and judgment are based. If the objective is kept in mind, gradually the mistakes that are commonly made will be eliminated and a stable, effective labor force built. If an employer allows his emotions to get the best of him and does not bother to get the facts when a kitchen accident occurs, he defeats this objective. The real solution lies in teaching the employee efficient, productive, and careful methods in his work. The manager must also learn to understand people. He must know how to obtain, select, train, and maintain an effective labor force. First step is to systematize a recruitment policy for maximum effectiveness. This can be done through job analysis for every position. Next, determine the best method of recruiting employees. Once you have the applicants for the position, select the person who is most qualified for the position that is open. Once he is hired, leave nothing that he needs to know to his imagination if you expect him to be responsible for the successful execution of the job.

Walk, Climb, Work Safely. Many accidents to employees arise from a simple cause: they don't know how to walk correctly, or climb stairs and ladders safely. The following safety precautions should be observed: (a) Look where you are going to step. (b) Be especially cautious in darkened areas. (c) Walk; don't run. Avoid sudden turns and quick changes in direction. (d) Keep shoes in good repair. (e) Never carry bulky objects so that your vision is obscured. (f) Never pull on anything unless your feet are securely braced. (g) Hold stairway handrails. (h) Never jump off moving vehicles. (i) Use ladders carefully. Before climbing one, be sure it is sound and correctly placed. (j) Walk in balance at all times.

Using Detergents. The author provides two charts by which it is possible to determine the gallon capacity of any rectangular or square sink to obtain uniform results when using detergents and various types of powdered cleaning agents.

Dishwashing Guide. A booklet entitled "Plates to Please" outlines correct dishwashing procedures for trainees.

THE MODERN HOSPITAL

Vol. 86, March, 1956

* Now she knows what patients put up with. R. C. Cole.—p. 118.

Dietitian Turns Patient. Firsthand experience as a patient helped the author evaluate the food problem at this hospital where she later became part-time dietitian. She describes her first meals which were perhaps not downright unappetizing but were lacking in imagination and color, and tray appointments left much to be desired. She concluded that there was no serious food problem but the hospital lacked a person whose chief responsibility was the appearance and palatability of the patient's trays. Those who prepared the food never saw it served, and the people who saw it served had no voice in its preparation. The hospital had no dietitian and it was obvious that it needed one. Soon after her stay as a patient, the author assumed responsibilities as part-time dietitian. With the assistance of the medical staff, a diet manual was compiled and adopted to standardize therapeutic diets as much as possible. A routine of patient contact and patient instruction where necessary was established. A series of instruction sessions for nurse's aides and floor maids on proper food handling techniques and tray service is to be introduced also. A great deal of her time is devoted to convincing the nursing staff and the aides of the importance of the tray to the patient—that meal time is not an incident to him but one of the most important things that happens all day long and that next to visitors, it has the greatest effect on his morale.

All stainless steel VACUUM POTS

For restaurants, hotels and hospitals.
Seamless drawn double walls of stainless steel, keep liquids hot or cold for hours.
One-piece liners never need replacing.
Lustrous platinum-finish inside and out.

No breakage • Easy-to-clean
Non-porous • Chip-proof • No replating
No polishing expense
A lifetime investment

Made of heavy gauge, yet light in weight and gracefully balanced. They have extra strong trigger hinges, silver soldered joints, welded bases and perfect pour spouts. The first and still best all stainless steel vacuum pots on the market.

NUMBER	Capacity
3012-1VH	10 oz.
3012-2VH	20

NUMBER	Capacity
3012-1V	10 oz.
3012-2V	20

NUMBER	Capacity
3012-1VA	10 oz.

Also available: a complete line of regular coffee pots

Write for catalogues: **LEGION UTENSILS CO.**
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Branch offices:
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420 Market Street, San Francisco, California

*SCAVULLO PAT.

LEGION UTENSILS CO.

PIONEERS IN STAINLESS STEEL

CATHOLIC HOSPITALS FROM COAST TO COAST ANSWER YES

*to the following questions made by a prominent, impartial Catholic Order:**

MODERNIZATIONS (100 to 400 BEDS)

1. Have you been fully satisfied with Mealpack as a sound solution to	
a. Reduction of food complaints?	100% say YES
b. Better coordination of Dietary service with Medical and Nursing Departments?	100% say YES
c. Improved Public Relations with the community?	100% say YES
2. How long have you used Mealpack, and how many beds does it serve?	Average: 2 yrs. 8 mos. with 140 beds
3. Do you still feel that Mealpack is the best overall answer for modern hospital tray service?	100% say YES
4. Have you had any serious objections from conversion to Mealpack?	100% say NO
5. Do you consider Mealpack's central tray system easier and simpler to operate and control than decentralized floor pantries?	100% say YES
6. If you were to build a new hospital, or sizeable addition, would you still prefer the Mealpack Central Tray System?	100% say YES
7. Did Mealpack justify your change-over costs?	100% answering say YES

NEW HOSPITALS (110 to 500 BEDS)

1. Do you find Mealpack superior to other tray services relative to:	
a. Maximum patient satisfaction with hot and cold food?	100% say YES
b. Better protection for delayed and special tray diets?	100% say YES
c. Minimum inroads on nursing time?	100% say YES
d. Minimum food waste when meals are interrupted by doctor's calls or indisposition of patient?	100% say YES
2. Compared to floor pantries, did Mealpack give you a lower dietary cost?	100% say YES
3. Would you still prefer Mealpack to any other tray service if you were to build again, or to revise tray service in an existing hospital?	100% say YES

Heart of every Mealpack System—
the Mealpack Stainless Steel Container.
Write for information on the Mealpack
System custom-tailored to your needs.

* *Mealpack Corporation will supply a list of these Catholic Hospital installations on request.*

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Visit us at the show. We'll look for you in Municipal Auditorium, Booth #210

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hot foods hot **mealpack** cold foods cold

Annual Meeting Glimmers

Milwaukee—October 9-12, 1956

AN IMPRESSION

A weary maintenance man lackadaisically sweeps the lobby of the silent, deserted auditorium. Leaning against an entrance pillar, a relaxed guard glances into the vast, semidark expanse of the arena. He is oblivious of the gloomy shadows, checked here and there by the dim light of an electric bulb.

This is the nothingness, the desolate empty stage. Within an incredibly few hours a transformation is to occur which, in its magic suggests the gentle upheaval of nature in spring, the sudden burst of feathery green softening the stark limbs of trees, the peeking of impudent crocus through the grass.

The seemingly limitless acreage of floor space now is charted into wide avenues, lined on either side by exhibits, 270 of them, resplendent and colorful against the dramatic backdrapes of black velour. The silence of the yesterdays is banished by the busy sloshing of dishwashing machines, the self-confident sizzling of deep-fat fryers browning corpulent shrimps or lazy floating doughnuts. Food and beverages, equipment, tableware, cleaners, and publications tidily line the promenades in all directions.

The selection of this auditorium is the first line drawn in the blueprint of the Annual Meeting. Meeting room space and exhibition area are primary considerations for an ever-increasing membership and family of exhibitors.

Equally important as the choice of the site is the careful building of the program which occupies a full year of the committee's time. Playing a serious game of tic-tac-toe, the group divides the four days' sessions in terms of subject matter. Speakers, suggested by A.D.A. members located across the country, are weighed. Questions are raised. Is the person an authority in his field? Has he something new and stimulating to offer? Is his delivery effective?

Answers are given. Then letters, more letters streak out to the experts. Eventually, about 125 of the carefully chosen are assigned to sessions. Simple was the task of Noah in selecting his highly divergent twosomes for refuge in the ark as compared with the multitudinously detailed arrangements required for the participants.

The lines of communication stretch tautly in all directions. The delegates of every state association are readied for discussions of matters at the meetings of the House of Delegates. Agendas are formulated, reports of chairmen are developed.

The population of participants is multiplying into the hundreds as the local committee reaches into its state's membership for chairmen and assistants to assume multifarious tasks, into schools and colleges for students to serve as pages and ushers.

Through the feverish months, steps are taken to activate people outside the inner circle. They comprise the world of communication—those who carry the story of the four short days to readers of magazines and newspapers, to audiences of radio and television. It all begins with an exploratory trip to a city which boasts a sizable auditorium. Then a small group of program planners starts exchanging ideas. Before the last presiding officer has stepped from the platform, thousands upon thousands of persons have learned a little more about the profession.

And then the maintenance man resumes his sweeping, the guard discards his vigilant demeanor and stares indifferently into the semidarkness of the arena.

IMPORTANT! Turn to News Notes, page 478 for information on Alumnae Meals.

Watch this page each month for Annual Meeting news.

Map of Milwaukee

HOTELS

Ambassador 1
Astor 15
Knickerbocker 16
Medford 5
Pfister 12
Plankinton House 10
Schroeder 3A
Wisconsin 9

POINTS OF INTEREST

Auditorium-Arena 4
Charles Allis Art Gallery 17
Gesu Church (R.C.) 2
Layton Art Gallery 13
Marquette University 6
Milwaukee Art Institute 14
Milwaukee *Journal* 7
Milwaukee *Sentinel* 11
Public Museum and Library 3
Tripoli Shrine Mosque 11
WTMJ Radio City 8

Application for Housing Accommodations

THE AMERICAN DIETETIC ASSOCIATION

Milwaukee, Wisc. • October 9–12, 1956

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION October 9–12, 1956 in Milwaukee, hotels and their rates are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED *MUST* BE INCLUDED.

Hotel	For one person	For two persons	
		Double	Twin Beds
AMBASSADOR	$5.00–$7.00	$8.00–10.00	$8.00–10.00
ASTOR	5.50– 7.50	8.00–10.50	9.50–12.00
KNICKERBOCKER	4.40 & up	6.60 & up	8.25 & up
MEDFORD	4.50– 5.25	6.25– 7.00	8.50–10.00
PFISTER	5.00– 9.00	7.50–10.00	8.00–12.00
PLANKINTON HOUSE	5.50–10.00	8.00–11.00	9.00–15.00
SCHROEDER	5.00– 8.00	8.00–12.00	10.00–16.00
WISCONSIN	4.50– 8.00	6.75–10.00	10.00–11.50

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

(See map on page 476—May issue)

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO: September 14, 1956

Miss Betty B. Wright
Room 517, 611 N. Broadway
Milwaukee 2, Wisc.

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION Convention in Milwaukee, Wisc., October 9–12, 1956

Single Room_____ Double Bedded Room_____ Twin Bedded Room_____
Other Type of Room_____
Rate: From $_____ to $_____

First Choice Hotel_____
Second Choice Hotel_____
Third Choice Hotel_____

Arriving at Hotel (date)_____ hour_____ A. M._____ P. M. Leaving (date)_____ hour_____ A. M._____ P. M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of *both* persons for *each* double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

_____
_____
_____
_____

(Individual Requesting Reservations)

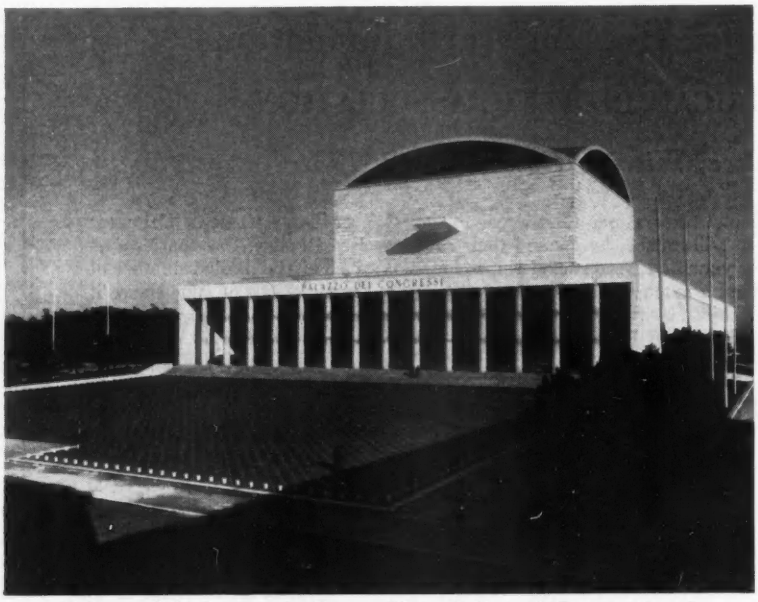
Name _____

Address_____

City and State_____

If the hotels of your choice are unable to accept your reservation the Hotels Convention Reservation Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been taken.

News Notes



Palazzo del Congressi, Rome—Site of Second International Congress of Dietetics

Second International Congress of Dietetics. A truly world-wide concept of dietetics and nutrition will be acquired by those who attend the Congress in Rome, September 10, through 14.

A speaker from Uganda will discuss an aspect of child nutrition. He will be joined during the four-day program by authorities from India, Eire, Israel, Brazil, and Peru as well as from many European countries, the United Kingdom, and the U. S.

Interpreters will be present during the major sessions and the conference periods. A.D.A. members will have the opportunity of sharing ideas with other national groups in conferences devoted to the following topics: obesity, psychology and diet, tuberculosis, protein malnutrition, large scale feeding, child feeding, training, and nutrition education.

Five A.D.A. members who will participate in the sessions were mentioned in the April issue of the JOURNAL. The latest provisional program includes other familiar names: Dr. Jean Mayer, Dr. J. Mott Rawlings, Alta Atkinson, Dr. Elda Robb, Monica McKenzie of New Zealand, and Margaret Neumuller of Sweden, who traveled extensively in the U. S. in 1954.

Annual Meeting Alumnae Meals. The Alumnae Meals Committee for the 39th Annual A.D.A. Meeting in Milwaukee will be pleased to make arrangements for mealtime reunions of college alumnae and dietetic internship groups. The reunions are scheduled as follows:

Tuesday dinner, October 9—dietetic internships
Wednesday breakfast, October 10—dietetic internships
Wednesday dinner, October 10—college alumnae
Friday breakfast, October 12—college alumnae

The name of the group, its chairman, and the approximate number expected should be sent to:

Frances Kelley, Chief, Dietetic Service
Veterans Administration Center
Milwaukee 14, Wisconsin

No reservations will be accepted after August 20.

Babcock-Hart Award for 1956. Dr. Gail M. Dack, Head of the University of Chicago's Food Research Institute, is this year's recipient of the Babcock-Hart Award. This award is given annually "to one who has advanced human nutrition by outstanding accomplishments in food research and technology" and honors University of Wisconsin scientists Stephen M. Babcock and Edwin Bret Hart. Donor of the Award is the Nutrition Foundation, Inc. Presentation of the award will be made June 11 at the 16th Annual Meeting of the Institute of Food Technologists in St. Louis. Dr. Dack, author of *Food Poisoning* a standard work, pioneered in studies on organisms in food, particularly those that present health hazards.

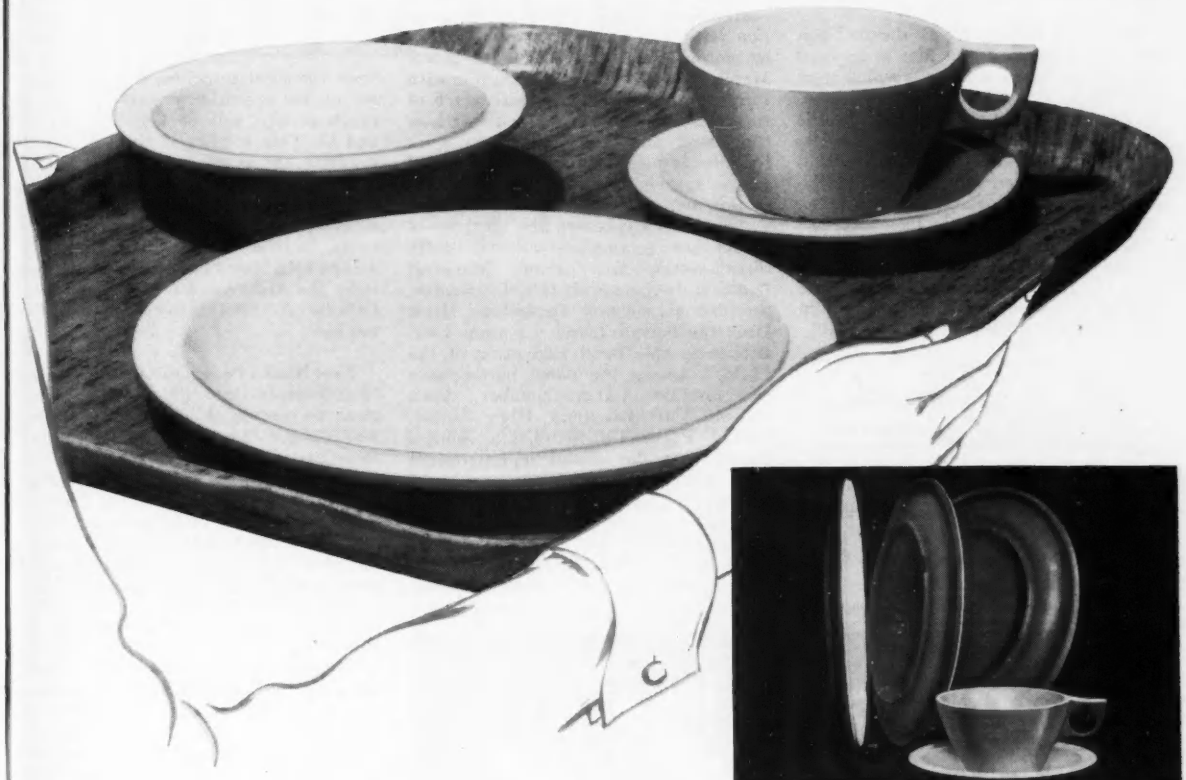
Summer Food Service Management Workshop. Iowa State College, Ames, will offer a workshop in the area of administration, July 2 to 13, in accordance with recommendations of A.D.A. The Iowa Dietetic Association is cooperating in the development of the program. Areas to be considered include: organization and planning; cost analysis and financial control; menu planning; food purchasing; work methods and work simplification; personnel relations; supervision, scheduling, and training; and public relations. The workshop will be adapted to the interests and needs of the group and will permit work on individual problems. Two quarter hr. graduate credit will be given for the two weeks of the workshop. The opportunity for a third week of study is optional; 3 quarter hr. graduate credit will be given for those completing the third week. Qualifications for entrance to the course are a bachelor's degree and at least 9 quarter credits in institution management or quantity food service experience. Further information is available from Dr. Grace M. Augustine, Head, Department of Institution Management, Iowa State College, Ames.

Summer Program. The Massachusetts Institute of Technology presents for the first time in its special summer program, "Perspectives in Food Technology," a unified series of conferences on developments of the past decade in the broad field of foods, the impact of these developments on the food industry, and present research trends in foods. During the two-week course, June 18 to 29, particular attention will be devoted to such topics as the following: radiation sterilization, chemicals in foods, geriatric feeding, instrumentation and automation in the food industry, food bacteriology and sanitation, chemical changes in foods during and after processing, the biochemistry of nutrition, work simplification, and food packaging. Academic credit will not be offered. Further information is available through the Office of the Summer Session, Room 7103, Massachusetts Institute of Technology, Cambridge 39, Massachusetts.

Research Grants for Improving Hospital Services. The U. S. Public Health Service has made eleven grants totaling $491,328 to enable hospitals, health agencies, and community groups to conduct research and demonstrations for the improvement of hospital services. Funds for the research were made available by Congress for the first time this fiscal year under the Hospital Survey and Construction Act. Among the grants made was one of $38,525 to the Connecticut Hospital Association, New Haven, to demonstrate the value of supplying member hospitals with the continuous services of consultants in the fields of personnel and dietary administration. Stewart W. Knox, Executive Director of

NEW TEXAS-WARE "COLOR-ON-COLOR"

PAT. PENDING



Two-tone, heavy duty dinnerware, molded of melamine with new self-draining Texas Ware contour base for easier washing, better drainage and faster air drying.

NOW TEXAS WARE, the most practical dinnerware for institutional use, comes in exclusive, new "Color-on-Color" to make your food service more attractive and add a more home-like atmosphere to mealtimes. The interiors of all cups and bowls and surfaces of plates and platters are lustrous white with other surfaces in beautiful pastels: Blue, Green, Coral, Grey, Yellow . . . or Tan interiors with Sandalwood.

Advantages of **TEXAS WARE**
FOR INSTITUTIONAL USE

- Choice of two-tone colors
- attractive non-fade decorative patterns
- exclusive "Contour Base"
- eliminates replacements
- home-like atmosphere
- light weight, easier to handle
- less noise
- retains heat of food without preheating plates
- cleanses easily, completely; more sanitary

PLASTICS MANUFACTURING CO.
825 Trunk Avenue • Dallas, Texas

Makers of

TRIPLE DUTY DALLAS WARE...HEAVY DUTY DALLAS WARE...TEXAS WARE...TEXAS WARE IMPERIAL 400

the Association, will be the principal investigator.

Another grant of $20,208 was made to the Georgia Department of Public Health, Atlanta, for an educational demonstration in small hospitals to train dietary supervisors who are not graduate dietitians. Dr. Ralph C. Williams, Director of the health department's Division of Hospital Services, will be the principal investigator.

Progress Report on Diabetes Film Strips. Copies of the film strips and their accompanying records which were part of the kit, "Taking Care of Diabetes," prepared by the Chronic Disease Program, U. S. Public Health Service, Department of Health, Education and Welfare, in cooperation with the American Diabetes Association and A.D.A., will soon be available for loan from the Communicable Disease Center of the Public Health Service, Washington 25, D. C. It is planned that this material will be available for sale from a film company at a future date.

Plentiful Foods MONTHLY LIST

The following list of foods expected to be plentiful during May has been released by the Agricultural Marketing Service, U.S.D.A.

Protein Foods

Beef
Chickens—broilers and fryers
Milk and other dairy products
Pork

Other foods

Cherries, canned and frozen
Dates
Grapefruit
Lard
Onions
Peanut Butter
Rice

Meetings. The *American Association for Health, Physical Education and Recreation* held its 59th convention March 25 to 29 in Chicago. "Action with Purpose" was the theme, with much of the discussion being concerned with how the community and school can work together in meeting the health needs of school age children. In recent years a section on school nutrition has not been included. This year two new sections—a school lunch section and a dental health section—were also added. Margaret Dunham, Indiana State Board of Health, presided at a panel discussion, "How Does the School Lunch Program Contribute to the Total Education of the Child." Among the panel participants was another A.D.A. member, Anna Allison, Carl Sandburg High School, Orland Park, Illinois. Clara Zempel attended as the official representative of A.D.A.

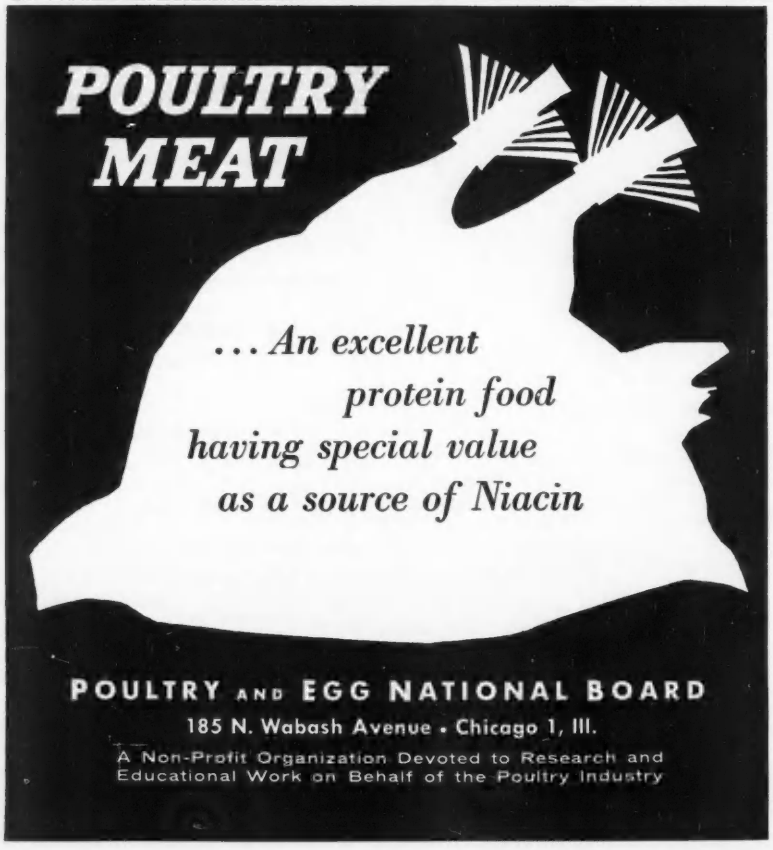
The 37th annual convention of the *National Restaurant Association* is being held in Chicago, May 8 to 11. The Food Show of the Research Department will include a demonstration of the cooking, storage, and purchasing of frozen meats, fish, poultry, and fruit, as well as a demonstration of the new tea brewing machine which automatically dispenses both hot and iced tea and was developed by the N.R.A. and Battelle Memorial Institute. Premiered at the convention will be the new $75,000 color film on restaurant merchandising. Afternoon shop talk sessions will be held for service operators, college and university food service directors, department store food service managers, inflight food service managers, industrial food service managers, cafeteria operators, and others. For the third year, the special "School Days" sessions set up for operators engaged in school lunch service will be held on May 10 and 11. This section of the convention program has as one of its chairmen an A.D.A. member, Edith Cushman, School Lunch Supervisor, Connecticut Department of Education, Hartford.

An Institute for Hospital Dietitians will be held May 19 and 20 in connection with the 41st Annual Meeting of the *Catholic Hospital Association* in Milwaukee.

New Radio Program on Child Care. "For Parents Only," a new radio program to discuss child illness and care, was inaugurated April 7 on the Mutual Broadcasting System from 10:00 to 10:30 a.m., E.S.T. The show is being presented by Mutual and the Medical Research Division of Johnson and Johnson in cooperation with the American Academy of Pediatrics. Leading pediatricians and mothers with true and typical medical problems are participating. The half-hour show will be recorded in various key medical centers; programs have been scheduled from New York City, Philadelphia, Boston, and Washington, D. C. Among the variety of subjects to be presented are instructions to a new mother about to leave the hospital with her infant, rehabilitation of handicapped children, early signs of illness, accident prevention, child guidance, and baby feeding.

Discover Cause of Galactosemia. Much of the mystery surrounding galactosemia, an often fatal metabolic disease of children, has been unraveled at the National Institutes of Health, Bethesda, Maryland, by scientists of the Public Health Service's National Institute of Arthritis and Metabolic Diseases. The disease ordinarily appears within a few days after birth. The infant is unable to utilize or even tolerate milk in any form. Symptoms are similar to those of other diseases, making diagnosis difficult. Diarrhea, lack of appetite, loss of weight, and jaundice appear in the earlier stages. Later developments include cirrhosis of the liver, mental retardation, blindness due to cataract, and death. The disease progresses rapidly, leaving serious, irreversible changes. With early diagnosis, treatment is simple. The affected child, placed promptly on a milk-free diet, will grow and develop normally.

Scientists at the Institute became interested in the disease when research workers in Manchester, England, reported certain abnormalities in the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... An excellent protein food having special value as a source of Niacin
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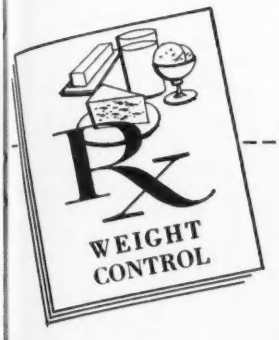
A Non-Profit Organization Devoted to Research and Educational Work on Behalf of the Poultry Industry

mirror, mirror, on the wall...



Overweight can be a physical, social, and economic handicap . . . an unnecessary handicap which can be eliminated by intelligent choice of food and moderate exercise.

Medically supervised research on weight reduction shows active, overweight adults losing 1½ to 2 pounds per week on a diet of appetizing meals featuring a variety of foods which provide all nutrient needs except calories—and which also satisfy hunger. Persons on such diets maintained pep and sense of well-being, reported no hunger pangs . . . but shed excess pounds!

These diets contain approximately equal weights of protein, fat, and carbohydrate. Fat combined with protein in a meal delays hunger—for it reduces stomach motility and gastric juice secretion, promotes slower digestion, and makes possible a more gradual absorption of nutrients.

Foods included in these diets provide all essential nutrients in amounts recommended for adults. Only calories are in deficit. Dairy foods are an important feature of these meals because of their high proportion of nutrients in relation to the calories they provide. Their taste appeal and variety make the diet easy to follow until desired weight is lost.

Dietitians! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

These materials are yours on request —without cost or obligation. Simply fill out the coupon below and mail it today.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

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Since 1915 . . . promoting better health through nutrition research and education.

NATIONAL DAIRY COUNCIL—*A non-profit organization* D-3
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red blood cells of infants with galactosemia. Their own work has revealed that the previously unknown enzyme, P-Gal transferase, which is found in normal blood, was missing in the blood of children with the disease. This inherited metabolic defect is the basis of the disorder.

Study of Aging. A comprehensive study of people over sixty-five years of age in the U. S. is to be conducted by the Health Information Foundation in cooperation with the National Opinion Research Center of the University of Chicago. The Foundation's Research Director, Odin W. Anderson, Ph.D., indicates that the study will investigate the problems of the aging through personal interviews with those in the upper ages and also with the relatives responsible for these individuals. Data will be gathered on problems such as retirement, required income, medical care, and maintenance of self-respect. It will not duplicate existing official records, such as that obtainable from the U. S. Census. The study will be designed to assist all interested groups by providing reference points and to serve as a model for further studies on a state and local basis.

UN Statistical Yearbook. The 1955 issue of the United Nations Statistical Yearbook, published in March, contains a record of worldwide social and cultural developments. Of interest are the data for over forty countries showing per capita supplies of foodstuffs, protein, and calories available at the retail level. The latest statistics indicate that there were over 3000 calories per capita available daily in Australia, Canada, Denmark, Finland, Ireland, Iceland, New Zealand, Norway, Switzerland, the United Kingdom, and the U. S.; and between 2750 and 3000 calories in Argentina, Austria, Belgium-Luxembourg, France, Netherlands, Sweden, Uruguay, and Western Germany. There were only between 2000 and 2200 daily calories per capita available in Honduras, Japan, and Pakistan, and less than 2000 calories in Burma, Ceylon, and India.

In Europe, for all the fifteen countries for which prewar information is given, except Belgium-Luxembourg, France, Iceland, and Sweden, per capita meat supplies were less, often appreciably so, than before the war. In most European countries, per capita milk supplies were more abundant in 1953–54 than on the average in the prewar period. Per capita supplies of fats and oils have been notably higher than the prewar average in Ireland, the Netherlands, and Finland, and somewhat higher in Western Germany, Belgium-Luxembourg, Norway, and Sweden.

Annual per capita supplies of cereals (flour and milled rice equivalents) were generally high, more than 170 kilograms, in Egypt and Turkey, and about 150 kilos (about twice the corresponding figure for Canada and the U. S.) in Greece, Italy, Japan, and Pakistan. The percentage of total daily calories derived from foodstuffs of animals origin (meat, eggs, fish, milk, cheese, butter, and so on) is less than 10 per cent in Ceylon, Egypt, India, Japan, Pakistan, and Turkey; and around 15 per cent in Greece, Italy, and Portugal. This is in contrast to almost 50 per cent in New Zealand, 40 per cent in Australia, Canada, Finland, Ireland, Norway, Sweden, and the U. S., and 33 to 37 per cent in most other European countries.

New Medical Center in Seoul. A formal agreement to establish a modern national medical center in Seoul, Korea, as a joint project of three Scandinavian governments, the Republic of Korea, and the United Nations Reconstruction Agency was signed in Seoul in March. The medical center will furnish medical care; provide training for Korean doctors, advanced medical students, nurses, and technicians; and serve as a national institution for the improvement of medical services. The Scandinavian governments are to provide eighty staff members for the center and pay their expenses; procure certain medical equipment and supplies; and import special dietetic foods as needed.

Marketing Costs for Beef. A report published by the U.S.D.A. on "Beef Marketing Margins and Costs" points out that the farm value of Choice grade beef averaged over 9 cents per pound lower in the last quarter of 1955 than a year earlier, whereas retail beef

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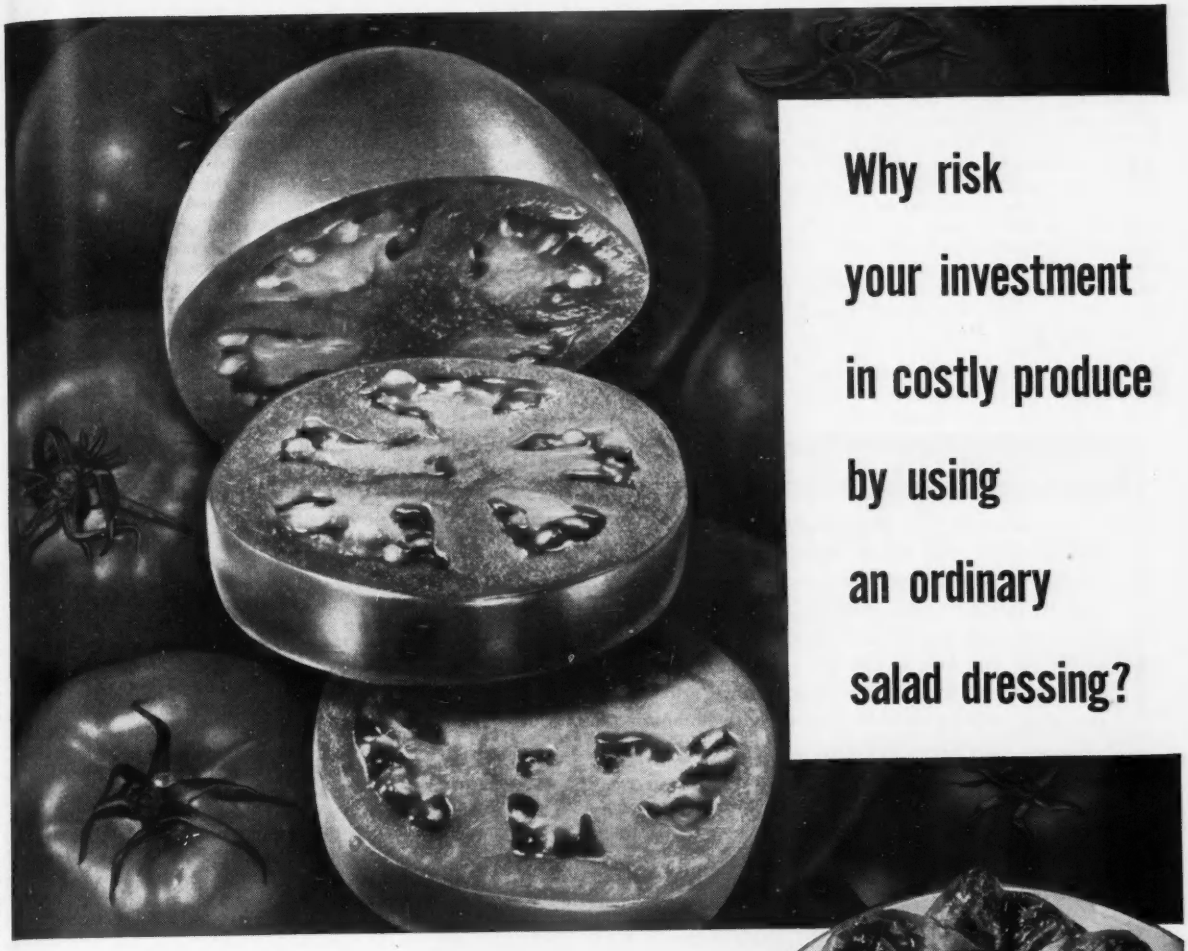

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prices were down only about 3.5 cents per pound. Approximately three-fifths of the drop in farm value was absorbed by higher marketing costs. The report shows that the farmer got 70 per cent of the consumer's dollar spent for beef in 1949, but only 62 per cent in 1955. These observations have been made by the Agricultural Marketing Service in response to a Congressional request for intensive studies of costs of marketing farm products. The over-all view of recent changes in the spread in prices between consumer and producer are contained in a recently issued report, "Marketing Costs for Food."

Distribution of Lamb and Mutton. Over half the lamb and mutton produced in the U. S. in 1954 went to New York, California, and Massachusetts. These states, plus Pennsylvania, Illinois, New Jersey, and Michigan, took 76 per cent of the U. S. supplies available for consumption. By contrast, less than 1 per cent was distributed to ten states—Vermont, North Dakota, South Dakota, West Virginia, South Carolina, Alabama, Mississippi, Arkansas, Oklahoma, and Wyoming. The U. S. average per capita consumption of lamb and mutton is 4.5 lb. per year. Consumption is highest in Massachusetts and California with 12.4 and 12.3 lb. respectively. More information will be found in the report, "Distribution of Lamb and Mutton for Consumption in the U. S.," AMS-93, and may be obtained from the Marketing Information Division, Agricultural Marketing Service, U.S.D.A., Washington 25, D. C.

Standard for Fish Sticks. The Fish and Wildlife Service of the Department of Interior is engaged in developing voluntary Federal standards for fishery products. With the cooperation of producers of frozen fried fish sticks, Service technologists have drafted a voluntary standard for this product. Since this standard is of interest also to raw material suppliers, transportation agencies, cold storage operators, wholesalers, retailers, and consumers, representatives of these groups met during March and April to discuss the draft.

Home Freezer Booklet. The bulletin, "Home Freezers, Their Selection and Use," U.S.D.A. Home and Garden Bulletin No. 48, has been revised to meet the increasing demand for freezer information. Household equipment specialists of the U.S.D.A. have found that it costs more than twice as much per pound (excluding the cost of the food itself) to store 360 lb. food for a year in a home freezer than to store and use 900 lb. from the same freezer during the year. As more food is used and replaced in the freezer, storage costs are spread over a larger number of pound and cost per pound decreases. Along with the research facts and figures, the bulletin also discusses such buyers' questions as: What size freezer does my family need? Will a home freezer save on my food budget? Which is better—a chest or an upright freezer? How should I defrost my freezer? Single copies of this bulletin may be obtained free from the U.S.D.A.'s Office of Information, Washington 25, D. C.

TV Script on Poultry. A new television script, "Know the Poultry You Buy," has been developed for use by home economists by the U.S.D.A. The script describes official inspection and quality marks in detail. Included also is a list of Information Specialists and official inspectors and graders in the various areas who will help in presenting the program. Copies are available from Mary T. Swickard, Home Economist, Poultry Division, Agricultural and Marketing Service, U.S.D.A., Washington 25, D. C.

Potato Flakes. The new product, potato flakes, made from Maine potatoes, will be market tested in the near future. With the addition of water and milk the potato flakes reconstitute to make a delicious mashed potato. The Maine Potato Commission will supply a carload of potatoes and transport them to the Philadelphia laboratories of the Eastern Utilization Research Branch of U.S.D.A., where about 20,000 consumer units of potato flakes will be produced. The Product Development Section, Market Development Branch, U.S.D.A., will then conduct the test. The location of the test market has not yet been determined, except that it will be a northeastern city of more than 100,000 population and the work will

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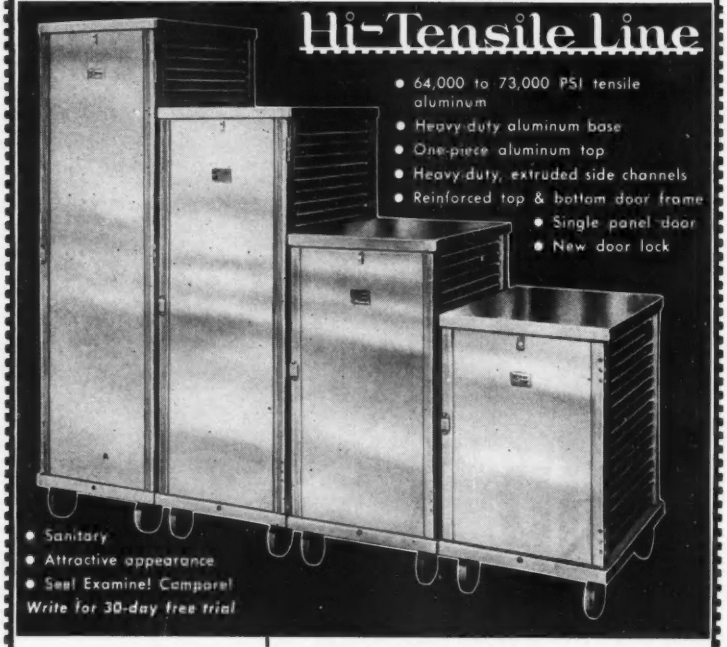
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- New Superflex timer (most accurate ever developed) toasts fast when cold, faster when hot. Toast is always perfect.
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be done in the late spring or early summer months.

Frozen Food Gains. During 1955, the frozen food business showed a comfortable sales gain over the preceding year. According to the National Frozen Food Distributors Association, a total of 7.5 billion lb., edible weight, of frozen foods were consumed during the year, an increase of over 10 per cent over 1954. Per capita consumption was 45 lb., compared to 41 lb. in 1954 and only 17 lb. just six years ago. Outstanding gains were made in the category of prepared frozen foods of the heat-and-eat variety. Pot pies were the leaders and now outrank all other items in dollar sales except orange juice. Vegetables ranked first in number of pounds sold, followed by poultry, fruit juices, prepared foods, fruits, seafoods, eggs, and meats. Fruits are a peculiarity of the frozen food business in that roughly three-fourths of the pack never reaches the cabinets in the retail stores; it goes to restaurants and to pie bakers, preserve and ice cream manufacturers. The three fruits important to the retailer are strawberries, peaches, and raspberries. A rapid expansion in the sale of frozen meats is expected in the next five years, when they may account for 10 to 15 per cent of total meat sales.

Candy Research. A variety of farm products are resulting in cheaper, higher quality candy with longer shelf-life. Cooperative research by the U.S.D.A. and the National Confectioners' Association has shown that candies can be produced at less cost with turbinado sugar and ion-exchange sugar. Turbinado sugar is made directly from cane juice during harvest season without refinement by bone char or carbon. Excellent chocolate goods, coatings, caramels, and other colored candies have been made from turbinado sugar at the Southern Utilization Research Laboratory. It was not suitable for clear, white, or brightly colored pieces. Ion-exchange sugar, whiter and purer than turbinado, is being produced experimentally and in the future may be suitable for most of the candies in which turbinado sugar is unsatisfactory.

Research in the dairy field is adding to the number of forms in which milk solids can be used for the manufacture of candy. Other advances include a candy with improved keeping quality for military rations, use of fruit essences, and information on moisture equilibrium in candies (loss of moisture results in loss of gloss, chalky spots, and off-flavor, and in shorter shelf-life).

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Seattle, Washington

News of State Associations

Alabama Dietetic Association. March 2 and 3 were the dates of the Alabama Dietetic Association meeting in Mobile. The program included:

"What's Cooking"—E. A. Hiller, Manager, VA Center, Biloxi, Mississippi
"Dietary Problems of the Diabetic Child"—Dr. Samuel Eichold, Physician, Mobile

Representing A.D.A. and speaking on "Association Affairs" was Martha Nelson Lewis, Education Section Chairman.

The Alabama Dietetic Association was one of the sponsors of the third Food Service Conference for Alabama Hospitals and Nursing Homes held at the University of Alabama, March 6 to 8.

Arizona Dietetic Association. A committee representing the Arizona Dietetic Association, the Arizona Home Economics Association, and the Arizona State Department of Health has prepared a *Guide for Feeding Children in Institutions*. This manual presents basic information on the food needs of children over two years of age, with suggestions for the selection, preparation, and service of food to children in custodial care. Through the Nutrition Service of the State Department of Health, members of the Arizona Dietetic Association have offered their services as consultants to those home and institutions not employing a dietitian.

California Dietetic Association. The first state other than Indiana to notify the Association Office of its efforts to further the "Shared Dietetitian Program" is California. A committee composed of Marie Ferguson and Laura Silva, Highland-Alameda County Hospital, Oakland, and Margaret Warde, Alameda Hospital, Alameda, has sent a questionnaire to the members of the

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state association. Typical questions appearing on the form include: Are you presently employed? Would you be willing to accept a position serving two or more small hospitals? Would you be available for part-time work in a small hospital? Could you furnish your own transportation? Is there a small hospital near you where you would be willing to help if they asked you? Are you available for part-time work away from your home?

The annual spring meeting of the California Dietetic Association is being held in Los Angeles, May 17 and 18. The program has been planned to stimulate self-improvement among the members. Included is a session on "Skills in Human Relations" and an evaluation by a clinical psychologist of a "demonstration interview" on diet therapy. In addition, techniques of presenting information to the public through radio, television, and journalism will be discussed. In conjunction with the project of the State Committee on Food Information, an exhibit is being presented of pamphlets and other printed matter with unsound information that is being disseminated and also announcements and accounts of activities of food quacks. Plans will be projected to strengthen the program on food information.

Members of the *Santa Barbara Region* cooperated with the Santa Barbara County Heart Association in presenting a series of classes on sodium-restricted diets. Response to these classes was so overwhelming that the course was repeated.

A representative of the San Diego Civil Defense spoke to members of the *San Diego Region* in March. As a result, a committee is being formed to plan a list of food supplies necessary to maintain a person for a week in case of disaster. The food list will be used by the local Civil Defense.

In the *Sacramento Region*, the annual joint meeting of the Dietetic and Home Economics Associations featured Dr. Ruth Huenemann, Associate Professor of Public Health Nutrition, University of California School of Public Health. Dr. Huenemann spoke on "Food Misinformation." Members of the press attended the meeting. Consequently, the information was highlighted in the newspapers.

Delaware Dietetic Association. Speaker at the February meeting of the Association was Kurt Smith, General Manager of the Sheraton Park Hotel, Wilmington, and member of the National Committee on Emergency Feeding of the Federal Civil Defense Administration. Mr. Smith talked on the "Emergency Feeding Program" and showed films of the testing program last year at Yucca Flats, Nevada. He was in charge of food procurement and transportation to Las Vegas for the emergency feeding of over 2000 persons. Guests at the meeting were invited from the Delaware Civilian Defense Program, American Red Cross, and Salvation Army.

The March meeting was held at the University of Delaware, Newark, where Dr. Miriam E. Lowenberg, Head, Department of Foods and Nutrition, Pennsylvania State University, was guest lecturer for a series of talks related to maternal and child nutrition.

District of Columbia Dietetic Association. "Dietetics International" was the theme of the February meeting of the district of Columbia Dietetic Association. Astrid Molander from Sweden and Inger Sandergaard from Denmark, who are enrolled in the graduate school of the University of Maryland, discussed the educational background and training of the dietitian in these two European countries, along with personal experiences in their careers. The third guest speaker, Dr. Flemmie Kittrell, Howard University, appeared in a colorful Indian sari and spoke on the progress of nutrition and home economics in India as she had observed it during her two-year stay in that country.

On February 16, the Professional Education Committee of the District of Columbia Dietetic Association held its first meeting for staff education. Dr. Harold Schnaper, staff member at Mt. Alto Veterans Hospital, Washington, D. C., spoke on "Recent Advances in Diagnosis and Treatment in Cardiovascular Hypertension."

Kansas Dietetic Association. The March issue of *The Sunflower*, the official publication of the Kansas Dietetic Association, has been prepared with high

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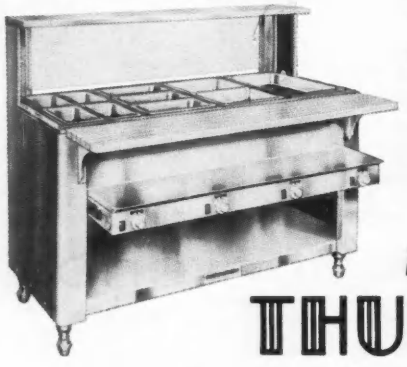

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Low purine diet	Sustagen, 530 Gm.	2050	124	350	19	no purine nitrogen; 42 mg. uric acid
Low cholesterol diet	Sustagen, 530 Gm.	2050	124	350	19	150 mg. cholesterol
High protein, low fat diet	Sustagen, 580 Gm.	2250	137	385	20	contains all amino acids in well balanced amounts
Liquid diet	Sustagen, 540 Gm.	2100	127	360	19	viscosity suitable for tube feeding
Bland diet (Peptic ulcer)	Sustagen, 570 Gm.	2200	134	377	20	buffering capacity of Sustagen is effective and prolonged
Liberalized low sodium diet*	Sustagen, 465 Gm.	1800	110	310	16	980 mg. sodium

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school students in mind. This career issue presents articles by high school and college students already interested in dietetics, by interns, and by practicing dietitians—giving their impressions of the profession. Several pages of photographs of dietitians in interesting job situations add interest. Members throughout the state are encouraged to place additional copies of this issue in the hands of high school students.

The Greater Kansas City Dietetic Association had June Turton of Southwestern Bell Telephone Company as speaker at its February meeting. Miss Turton spoke on employee training programs and the proper use of the telephone.

Kentucky Dietetic Association. The spring meeting of the Kentucky Dietetic Association was held April 3 to 5 with the Kentucky Hospital Association in Lexington. Members of the *Blue Grass Dietetic Association* acted as hostesses. At a luncheon on April 3, the A.D.A. representative, Bertha Biltz, was the speaker. The program for April 4 was as follows:

"What's Your Question?"—Beulah Hunzicker, Director of Dietetics, Presbyterian Hospital, Chicago

"New Equipment Developments"—A. A. Mesko, Chief Food Research Consultant and Supervisor of Customer Relations, Hotpoint Company

"Supervisory Techniques"—Dr. Cloyd Steinmetz, Director of Sales Training, Reynolds Metals Company

At a joint session with the Kentucky Hospital Association on April 4, Miss Hunzicker spoke again, this time on "How to Study a Kitchen Activity."

Michigan Dietetic Association. Henry Ford Hospital, Detroit, was the scene of the spring meeting, April 19 and 20, of the Michigan Dietetic Association. The program included:

"Liquified Whole Food"—James Barron, M.D., Henry Ford Hospital, Detroit

"Dietitian-Employee Relationship"—John Brownfain, Ph.D., VA Hospital, Dearborn

"The Practical Application of Metabolic Inter-Relationships of Vitamins and Minerals"—Margaret A. Ohlson, Ph.D., Michigan State University, East Lansing

"What Food Means to People"—Dorothy Lee, Ph.D., Merrill Palmer School, Detroit

"Group Instruction for Diabetics"—Shirley O'Connell and Margaret Brown, Visiting Nurse Association, Detroit

"Continuing Education Workshops"—Margaret Wilson, Ohio State University, Columbus

"Diet in Tuberculosis"—Edward J. Nowicki, M.D., Veterans Administration Hospital, Dearborn

Representing the Association at the meeting was Martha Nelson Lewis, Education Section Chairman.

Minnesota Dietetic Association. In conjunction with the Minnesota Home Economics Association, the Minnesota Dietetic Association presented the fifth annual Careers in Home Economics Workshop, April 5 to 7 at the St. Paul Campus, University of Minnesota. Superintendents, principals, and teachers of high schools and academies in Minnesota were asked to select from each school one or two girls, preferably sophomores, planning to go to college, but undecided about the college course, and who could take back to their schools and communities an interesting and informative report on career opportunities in home economics. Home economics teachers were invited to participate in all activities, including living in the dormitory. Colleges having home economics clubs were invited to send two students to attend the workshop and act as big sisters to the high school girls.

New York State Dietetic Association. An anniversary and retirement tea honored Inez Reeves Wall, Chief Dietitian, Goldwater Memorial Hospital, Welfare Island, New York, on March 2. The occasion marked Mrs. Wall's forty-sixth anniversary as a dietitian in the New York City Department of Hospitals. She is a charter member of A.D.A. and has taken active part in the growth of both the New York State and Greater New York Dietetic Associations.

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Pennsylvania Dietetic Association. The twenty-third annual meeting of the Pennsylvania Dietetic Association was held in Harrisburg, April 4 to 6. The program included the following:

"Effect of Dietary Lipids on Blood Coagulation"—Jerome M. Waldron, Ph.D., Associate Professor, Department of Physiology, Temple University School of Medicine, Philadelphia

"The Economics of Hospital Food Service"—Ernest N. May, Charitable Research Foundation, Inc., Wilmington, Delaware

"Investigating Pyridoxine Deficiency in the Pregnant Albino Rat"—Myrtle L. Brown, The Pennsylvania State University, University Park

"Thirty Little Rats and How They Grew (Studies on Low-Sodium Milk)"—Emma Seifrit, Drexel Institute of Technology, Philadelphia

"Food Patterns of Ceylon, India"—Sathiamalar Sinnappoo, Drexel Institute of Technology, Philadelphia

"Food Patterns of Australia"—Ruth Peil, The Pennsylvania State University, University Park

"Food Patterns of Puerto Rico"—Lily Berrios, The Pennsylvania State University, University Park

"Food Patterns of Gold Coast, Africa"—Janet Asare, Director, Dietary Department, Woman's Hospital, Philadelphia

"Food Patterns of Pakistan"—Jamila Khalid, The Pennsylvania State University, University Park

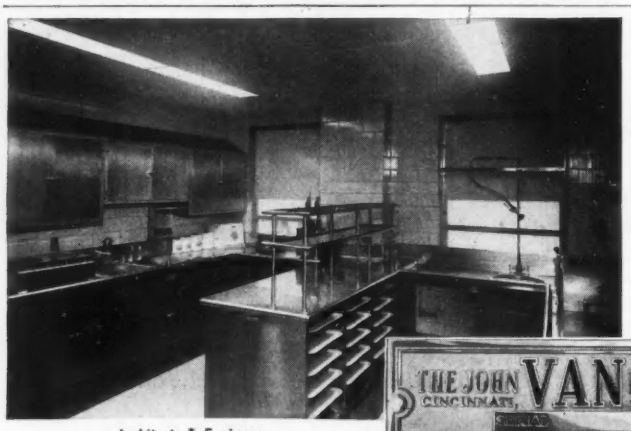
Conferences on various phases of nutrition and dietetics were led by Katherine H. Fisher, Ph.D., Assistant Professor, Foods and Nutrition, The Pennsylvania State University; and by C. Frances MacKinnon, Associate Professor of Public Health Nutrition, University of North Carolina, Chapel Hill. Speaking on "Association Affairs" and acting as A.D.A. representative was Adelia M. Beeuwkes.

The *Central Pennsylvania Dietetic Assocation* has held two outstanding all-day meetings this year in Harrisburg. The first took the form of a panel discussion where pertinent questions of everyday problems such as the 40 to 44 hr. week, salaries, fringe benefits, and delegation of authority as they relate to state, private, and federal hospitals were discussed. The second meeting revolved around state convention plans and prospects for career conference programs. A third all-day meeting was held in Altoona. Dr. Warren J. Myers spoke on recent developments of the Salk and other vaccines for poliomyelitis. Dr. Ben L. Hull followed with a discussion, "Diseases of the Bones and Their Dietary Requirements," and Mary McArthur, R.N., spoke on "The Patient's Problems When in the Iron Lung."

The *Nittany Valley Dietetic Association* held a meeting February 16 at Pennsylvania State University, to honor students in the institutional administration department. Guest speaker was Nancy Phillis, a Penn State graduate, who told students of her experiences as a dietitian. The April meeting of the Association was held at the human nutrition experiment house at the University. Several members of the research staff participated in a discussion entitled, "Research Is Exciting."

Members of the *Northeastern Dietetic Association* have been active in recent months in setting up feeding stations for flood relief. A recent meeting of the Association was held at the Pennsylvania Power and Light Company where a high compression steam cooker was demonstrated and Dorothy Hall, Home Service Supervisor, talked on "Controlled Meat Shrinkage."

The March meeting of the *Philadelphia Dietetic Association*, held jointly with the Philadelphia Home Economics Association, featured Dr. Katherine H. Fisher, Assistant Professor of Foods and Nutrition. The Pennsylvania State University, who spoke on "What's New in Human Nutrition Research at Penn State." Dr. Fisher contributed valuable information on her work and use of the calorimeter for experiments in relation to protein metabolism, calcium metabolism, and bone density. A film was shown on results of ascorbic acid studies. Dr. Kathryn E. Langwill, Director of Health Education, Lankenau Hospital, exhibited the "Transparent Lady," only five models of which are in this country. It is used for teaching purposes and recently was purchased by the hospital from Germany.



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Good Samaritan Hospital
•
Dayton, Ohio

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Schenck & Williams • Dayton

Good Samaritan happy with Van equipment in new floor kitchens

• The new Villa Madonna maternity wing of the Good Samaritan Hospital at Dayton has three floor serving kitchens and one diet kitchen . . . all with most modern all stainless equipment . . . designed, fabricated and installed by Van. Sister Helene, Chief Dietitian, says that they are a *joy to clean.* It is so easy to keep everything shining and clinically clean.

• Van engineers collaborated with Harry I. Schenck in laying out the decentralized service for most efficient operation, providing 375 meals to patients daily, for light diet service.

• When you have a food service problem . . . whether it involves modernization, expansion or an entirely new installation . . . be sure to make use of Van's *century of experience.*

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ONLY BEAUTIFUL BOONTONWARE BRINGS YOU

Every Institutional Advantage with no Institutional Look

The outstanding virtues that put Boontonware into millions of homes have made it ideal for serving large groups.

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- Boontonware is practically indestructible—*no broken or chipped dinnerware on your shelves.*
- Boontonware stacks evenly, handles easily and quietly—*no deafening handling clatter, untidy shelves.*
- To Sum It Up: Boontonware does all the things good dinnerware should do and *in addition* . . . it practically *pays for itself.*

There is a complete line waiting for you—plates, bowls, cups and service dishes. See your regular supply house or write us for the name of your nearest dealer.

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Recent programs of the *Pittsburgh Dietetic Association* have included the following topics:

"Dietetics and Public Health Nutrition in Australia"—Ruth Peil, The Pennsylvania State University

"Personnel Management"—Howard Schwartz, Assistant Superintendent, Pennsylvania Training School

"Changing Behavior Patterns in Adaption to Food Habits"—Dr. Howard Roland, Department of Sociology, University of Pittsburgh

"Food as Children See It"—Dr. Miriam Lowenberg, The Pennsylvania State University

Approximately twenty-four Pittsburgh dietitians and nutritionists volunteered their services to the Obesity Research Study at Folk Clinic.... "What's Cooking in Pittsburgh" was the basis of a series of TV programs sponsored by the Health and Welfare Federation. These scripts were reviewed by members of the Association.

Virginia Dietetic Association. The spring meeting of the Virginia Dietetic Association was held in Charlottesville, March 22 to 24. The program included:

"Some Aspects of the Purpose and Analysis of Canned Foods"—David H. Behrhorst, President, H. F. Behrhorst and Son, Inc., Charlottesville

"Some Newer Trends in Personnel Management"—Dr. Weldon Cooper, Associate Director, Bureau of Public Administration, University of Virginia, Charlottesville

"Dietary Management in Cardiac Surgery"—Francis Dammond, M.D., Department of Surgery, The University of Virginia Hospital, Charlottesville

"The Selection, Purchase, Use, and Care of Equipment"—Christine Ryman Pensinger, Food and Equipment Consultant, The Aluminum Cooking Utensil Company

"Wines and Wine Cookery"—Gene Malone, Great Western Wine Company

The A.D.A. representative at the meeting was Dr. May S. Reynolds.

The project of the *Blue Ridge Dietetic Association* for the past year has been weight control. The aim of the project was to have all members attain their ideal weight during the year.

The *Richmond Dietetic Association* is using as its theme this year, "Personality Fulfillment." Three phases which have been covered in the monthly programs dealt with personal improvement, outside interests, and recognition of professional responsibilities and trends.

Washington Dietetic Association. The February meeting of the *Seattle Dietetic Association* took the form of a panel discussion on "Personnel Relationships." John Hennessey, Assistant Professor of Business Administration, University of Washington, acted as moderator. In March, a member of the King County Medical Society spoke on "Living with Cancer."

Administrative dietitian, members of the *Spokane Dietetic Association* presented the program at the February meeting of the Association. Their topic was "Quantity Recipes and Cost Control."

A new local group, the *Yakima Dietetic Association* was organized in February. It was decided to include all dietitians and food service supervisors in the Yakima Valley, extending from Ellenburg to Pasco. Because the group is small, only two officers were elected: President, Anne Johnston, St. Elizabeth Hospital; and Secretary-Treasurer, Margaret Hill.

Wisconsin Dietetic Association. The first issue of the *Hospital Food Service Bulletin* was published in March by the Wisconsin Dietetic Association at the request of the Wisconsin Hospital Association. The purpose of the newsletter is to keep hospitals up-to-date on advances and current practices in the field of food service. The project is under the direction of Mary K. Waits, Milwaukee County General Hospital, Food Administration Chairman of the Wisconsin Association.

Association Activities

State Meetings. A.D.A. representatives attending additional state dietetic association meetings are:

April 13–14—Elmira F. Blecha, Missouri Dietetic Association, Springfield

April 27–28—May S. Reynolds, Wisconsin Dietetic Association, Madison

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because exclusively made for Institutions and Restaurants

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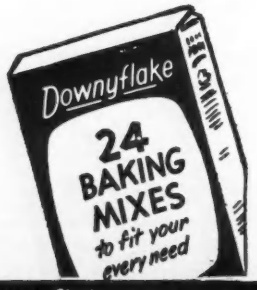
Because your standards are higher, we've had to make Downyflake better than ordinary mixes. In fact, Downyflake is made exclusively for the Restaurant and Institution trade . . . enabling you to serve the best bakery goods money can buy. Downyflake helps you plan your menu accurately . . . to maintain portion and cost control with ease.

***XTA,** the Xtra Taste Appeal ingredient (which was the foundation of DCA success a third of a century ago) is backed by constant research, skilled blending and the finest ingredients the market affords. This has enabled us to give you the fine quality products you need to maintain your high standards.



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Covering all of the enriched cereal grain foods, this brochure gives you accurate information about enriched white flour, enriched white bread, enriched macaroni products, enriched white rice, enriched farine and pastina, enriched corn meal and grits, fortified or restored breakfast cereals.

You will find this brochure of much help as a reference source. Why not send for your personal copy today? Just write to the Vitamin Division. There is no charge, of course. If you need a quantity in your work—in teaching, for example—please tell us. We shall be happy to fill your request for reasonable quantities.

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May 9—Lucille M. Refshauge, Rhode Island Dietetic Association, Providence
May 10-11—Helen A. Hunscher, Ph.D., Tennessee Dietetic Association, Gatlinburg
May 24-25—Winifred H. Erickson, Minnesota Dietetic Association, Minneapolis
May 25-26—Marjorie M. Morrison Arkansas Dietetic Association, Little Rock

Changes in Staff Titles. To explain more fully the responsibilities of various members of the Headquarters staff, certain changes in titles have been made.

Ruth M. Yakel is A.D.A. Executive Director, and Dorothy W. Inyard is Membership and Credentials Director, both titles self-explanatory.

Dorothy J. Bates will have the title of Organizational Liaison Director. She works with the A.D.A. Section Chairmen and Committees, the Council and House of Delegates Committees, and assists with the library activities.

Clara Zempel, State Activities Director and Program Coordinator, as previously, works closely with the affiliated state dietetic associations in their activities and questions, assists with national representatives to state meetings, and handles program arrangements for and assists the local committee with the Annual Meeting.

New Reprints List. A revised listing as of April 1956, of the A.D.A. *Publications and Reprints* is now available from Headquarters office. Many recent articles under various classifications will be of interest to you.

Community Health Week. As a result of the publicity given Community Health Week in A.D.A. publications, many state and local dietetic associations were active participants in this national program.

National Health Council. Rita Campbell, as A.D.A. representative, attended a meeting of the Health Careers Project of the National Health Council in New York City on April 11. Member agencies of the Council participated. The discussion centered around the means by which interested national agencies can help to broaden and strengthen local health career activities.

New A.D.A. Poster. "You Are Equipped for Many Careers When You Specialize in Dietetics"—this slogan is the theme of a bright, three-color poster now available for career guidance activities. Measuring 17 by 21 in., it carries sketches of five different career situations. It is suitable for either the junior or high school group, and members will be happy to know that the price is only 5 cents a copy.

Combating Food Misinformation. The correct statements to accompany the list of fallacies developed by the A.D.A. Community Nutrition Section in 1953 have been completed and are being edited for publication. A committee is being organized to help state dietetic associations in their efforts to combat food misinformation.

WHEN
DISHES DRY
SPOTTED
IT COSTS YOU
MONEY
Dishes washed and then rinsed in water maintained at correct temperatures dry gleaming-clean and spotless, without toweling, and come out thoroughly sanitized. Spotted dishes mean extra work and wasted washing time, and also create dissatisfaction. Only dependable temperature controls, properly used, can give you the best results at lowest cost from your dishwashing machine and detergents.
Be sure your Dishwashing Machine is equipped with *Robertshaw*® Heat Controls. Ask Your Equipment Salesman. He knows.
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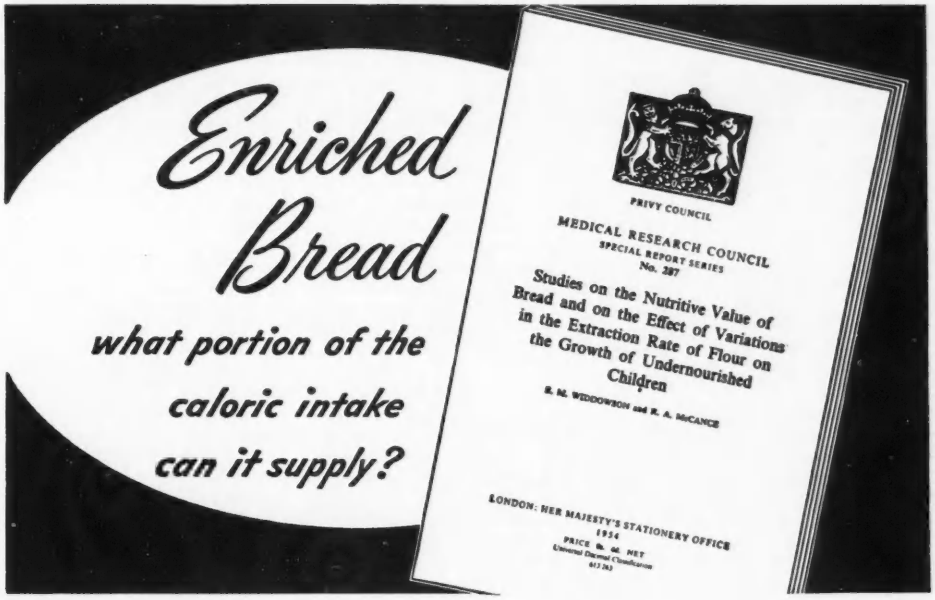
Obituaries

Dr. Frederick G. Carter. On February 19, Frederick G. Carter, M.D., died in Cleveland. Dr. Carter was a personal friend of many members of A.D.A. and had served on the Advisory Board of the Association from 1949 to 1952. He had been president of the American Hospital Association, the American College of Hospital Administrators, the Minnesota Hospital Association, and the Ohio Hospital Association. Dr. Carter received his M.D. degree from Johns Hopkins Medical School in 1920. He had held positions with Johns Hopkins Hospital; Ancker Hospital, St. Paul; Christ Hospital, Cincinnati; and St. Luke's Hospital, Cleveland. To the dietitians who worked with him, he was an unfailing source of inspiration and encouragement. His abilities as an administrator were outstanding, and his loss will be felt by all those who were associated with him.

May McIntyre Evanson. Word has been received by the A.D.A. office of


Enriched Bread
what portion of the caloric intake can it supply?
PRIVY COUNCIL
MEDICAL RESEARCH COUNCIL
SPECIAL REPORT SERIES
No. 287
Studies on the Nutritive Value of Bread and on the Effect of Variations in the Extraction Rate of Flour on the Growth of Undernourished Children
LONDON: HER MAJESTY'S STATIONERY OFFICE
1954

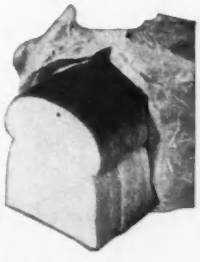
A striking observation was made in a recently reported nutrition study. Undernourished children in a German orphanage, placed on diets providing a high percentage of their total calories in the form of bread, not only improved in health, but "in spite of the simple diet provided" gained in weight and increased in height at a highly satisfactory rate.*

The children received daily supplements of vitamin A, 2000 I.U., vitamin D, 1000 I.U., and ascorbic acid, 25 mg.

In the words of the investigators: "One of the most striking findings, . . . and perhaps the most unexpected one, was the remarkable way in which the general condition of all the children . . . improved . . ."

"Probably the most important finding concerns the high nutritive value of wheat in any of the forms customarily consumed by man. . . . [The diets fed] provided undernourished children aged 5-15 years with all the nutrients required for a high rate of growth and development for a period of 18 months."

Enriched bread, made from 70 per cent extraction flour and very similar to enriched bread sold in the United States, was among the breads used. While the diets used in this study are not justified in this country with its abundant food supply, hence do not merit consideration for applicability here, they nevertheless serve to emphasize again the high nutritional value of enriched bread.



*Widdowson, E. M., and McCance, R. A.: Studies on the Nutritive Value of Bread and on the Effect of Variations in the Extraction Rate of Flour on the Growth of Undernourished Children, Medical Research Council, Special Report Series, No. 287, London, Her Majesty's Stationery Office, 1954.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

AMERICAN BAKERS ASSOCIATION 20 North Wacker Drive • Chicago 6, Illinois

the death on April 2 of May McIntyre Evanson. Mrs. Evanson became a member of the Association in 1928, following an internship at Evanston Hospital, Evanston, Illinois. A graduate of the University of Illinois, she had held various positions in California, where she had made her home since 1933.

Reba Rose Mercer. The A.D.A. office has been notified of the death on February 20 of Reba Mercer, Administrative Dietitian, University of Missouri, Columbia. Miss Mercer had held this position since the completion of her administrative dietetic internship in 1953 at the University of Washington, Seattle.

News of Products and Services

Armour and Company's "Flash Frozen Breaded Meats" are ready-to-cook, breaded portions of veal and pork, uniform in size and weight. These Armour products eliminate buying and storing of breading materials, guesswork on portion control, time and labor to apply breading; assure uniformity of breading; and offer breaded meats always on hand for quick use from the frozen state. The breaded meats come in 10-lb. boxes and are foil-wrapped for flavor protection. A 3-oz. breaded veal steak costs 12½ cents.

Available from *Lemon Products Advisory Board* are helpful purchasing, storage, serving, and cost figures for institutional lemon products—frozen and non-frozen. Institutional sizes of concentrate for lemonade are now available and the product is quick and easy to use—just add water and serve. The cost is approximately 3 cents an 8-oz. serving.

The *Lemon Products Advisory Board* has also released a series of quantity recipes using frozen or non-frozen lemon juice products. Featured recipes include lemonade fruit salad; jellied beet salad; layered aspic salad; tuna spinach salad; cooked leomon salad; chef's salad; lemon French dressing; salmon loaf; halibut in lemon sauce; Spanish frankfurters; lemonade prune whip; lemon meringue; lemon meringue pie; lemon sponge pudding; lemon butter icing; lemon-grape punch; and lemon-tea punch.

Pillsbury Mills is suggesting "Brownie Pie" to vary the conventional brownie bar on the dessert menu. Using *Pillsbury's* "H & R Fudge Brownie Mix," the batter is baked in pie tins instead of the usual sheet pan. "Brownie Pie" represents an easier dessert to make than cake because it has no frosting, and it is quicker to make than the conventional type of pie because there is no crust to roll and fit into pans. Batter is scaled into each tin and baked at 350 F. for 35 to 40 min. One 5-lb. bag of "Fudge Brownie Mix" yields five 9-in. pies of twelve 2½-in. wedges each. Based on this figure, the portion cost is 3 cents per wedge-serving.

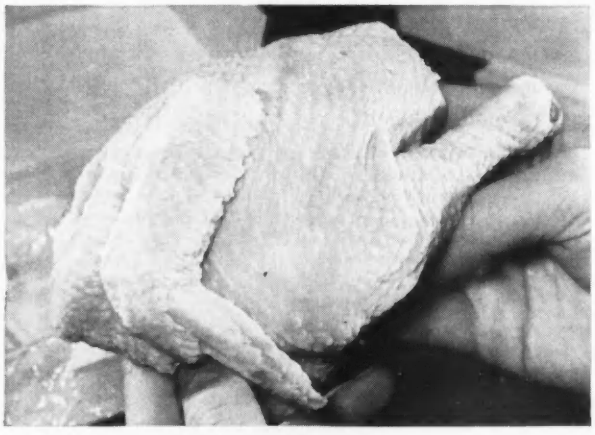
The *National Dairy Council* is presenting an attractive booklet which has been written by Dr. Ruth Leverton to motivate teen-age girls to more intelligent food selection. The approach to the teen-age girl is one of appeal on the basis of her figure development as it is affected by nutrition. Thus she is motivated through her natural interest in her personal appearance. Included in the text are: a chart showing a physical growth record which enables the young girl to understand how her inherited body build influences is her desirable weight; caloric guides; a discussion of nutrients, exercise, and snacks; and a caloric catalog.

Hotpoint's "Superheat" electric pizza oven has space for six 12-in. pizzas, and by cutting baking time to 5 min., turns out a pizza a minute. A high temperature range makes possible the 5-min. baking period, as well as a superfast heat recovery after refrigerated dough is placed in the oven. The "sealed-heat" chamber of the oven is insulated on all six sides. The oven can be used for baked goods other than pizza and for most roasting operations. The "Superheat" pizza oven is manufactured in *Hotpoint's* "glamourline" finish with stainless steel veneer and can be banked or stacked with other *Hotpoint* oven sections for space-saving convenience. It is also available in all-stainless steel finish.

Ocean Spray's "Food Service Folio"

Control your cost-per-serving with

OCOMA BROILER HALVES



They're portion-controlled for profit control

When you order half broilers, don't order by *average* size, and *hope* you'll come out right . . . instead order Ocoma Portion Control Half Broilers.

All Ocoma Half Broilers in your order will be *identical in size.* No matter what size you ask for —10, 11, 12, 13, 14, or 15-ounces—you'll know in advance exactly how much each serving costs.

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Also: Gourmet Breasts • Drumsticks • Thighs • Whole Legs • Half Breasts • Whole Breasts
Turkey Rolls • NEW Turkey-Chicken Sticks

An Announcement of Importance for

CAREER DIETITIANS

from Col. Miriam E. Perry

Chief, Medical Specialist Corps,
United States Air Force, Office of the Surgeon General,
Washington, D. C.

"In these days of supersonic flight no other facet of the dietary field offers greater opportunities for persons of initiative and imagination than service as an Air Force dietitian. This is because the airborne human is subject to certain definite and sometimes critical physiologic stresses against which mechanical aids alone cannot provide protection. In order to withstand stresses most effectively, the individual must be in peak physical condition. With a nutritiously adequate daily diet as the basis, certain modifications in relation to flying activities may be required in varying degrees, the extent of the limitations being dependent upon the individual, the type aircraft, the length of the flight and the ambient atmospheric pressure."

Colonel Perry's basic analysis of the dietitian's importance in the U. S. Air Force carries this message to you: *Serve as an officer in the U. S. Air Force.* It is an interesting, challenging and rewarding career. For complete information, mail the attached coupon now.

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Attention: Medical Specialist Corps

Please send me all the details on my opportunities as a dietitian in the Air Force.

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for May features two cranberry recipes: savory cranberry beef, and cranberry delight. Savory cranberry beef is a beef stew, with whole or jellied cranberry sauce added for distinctive flavor. Cranberry delight is a dessert sandwich made of three layers of Graham cracker crumbs and two layers of cranberry sauce topped with whipped or ice cream.

A new ⅓ h.p. meat chopper capable of producing 9 lb. chopped meat per minute has been announced by *Toledo Scale Company*. The new model features a spiral fluted cylinder and deep fluted feed screw for maximum cutting efficiency and is equipped with precision ground, flat-sided plates to eliminate breakdown due to a sheared cylinder pin. The switch is mounted at the end opposite the cutting group so that it can be conveniently operated from either side of the machine. A large capacity safety-type feed pan and a stomper are supplied. The model is finished in durable silver hammertone and the bowl, feed-screw, and pan are heavily tinned for greater sanitation.

Toledo is also introducing a large capacity garbage disposal unit designed for commercial use. The "centriflo" action of this disposer features a patterned distribution of the cutting elements so that the food wastes are quickly processed and flushed through drain vents by a powerful centrifugal force. A choice of feeding units, including a large cone, a chute, or scrapping block with silver saver, adapt this model to the user's requirements. It is available as either a 3 or 5 h.p. unit.

Cherry Growers & Industries Foundation suggest canned sweet cherries to "answer" dessert and salad problems. Cherries jubilee; jubilee sauce with meats and poultry; black cherry Boston cream pie; black cherry sundae; and black cherry topping for angel cake and puddings are a few of the cherry uses listed. Light or dark sweet cherries are suggested for molded salads, fruit plates, fruit bowl salads, and frozen fruit salads. Recipes for black cherry sauce and brandied cherry salad are available.

Each 2¾-oz. package of "Lem-O-Rich" soft drink crystals, product of *Edward Don and Company*, has the flavoring capacity of thirty-five fresh lemons. The contents of one package, when added to 2 gal. water and sweetened, make 2 gal. lemon drink. Lemon juice for cooking, baking, and cocktails is made by dissolving contents of the package in 1 qt. water. "Lem-O-Rich" costs about one-fifth as much as fresh lemons and about one-third the cost of frozen lemon juice.

Seven different *Wyandotte* cleaning products are now available in a "shower-proof" polyethylene packaging which keep the contents dry in spite of accidental wettings or storage in damp places. Called "Dual-Paks," they are packed three to a case, each containing 20 to 25 lb. cleaning materials and fitting compactly into small storage space.

A 17-min. slide film with sound platter called "Efficient Machine Dishwashing" is being shown by *Wyandotte Chemicals*. A thorough discussion of machine dishwashing procedures is given in both sound and picture.

New ideas from the Research Kitchens of *Gerber Baby Foods* feature "ham with a golden glaze" made from Junior Fruit Base. A new *Gerber* Junior Food product is "Macaroni, Tomato, Beef and Bacon." The seasoning is mild yet flavorful. The generous "junior" size suggests this new product as an adult casserole.

Downyflake Baking Mix Division of *Doughnut Corporation of America* has added toppings and fillings to its prepared baking mix line. This enables the company to offer the institutional trade a complete ingredient set-up required to turn out cakes from start to finish. The new line consists of real fruit concentrates for cakes, pies, and icings—orange, strawberry, pineapple, and wild cherry; meringue toppings for desserts, pies, and cakes; icings—chocolate, fudge, caramel; crunch topping for cakes, doughnuts, pastries, and sweet dough; and mince meat for pies and fruit cakes.

"Rins-O-Matic," the *DuBois Company's* rinse infusion system for mechanical dishwashers automatically proportions the feed of additive to rinse flow, regardless of pressure. There are no electrical connections, moving parts, or complicated mechanism. The unit is small and compact—16 in. long, 5 in. wide, and 9½ in. high—yet takes care of many hours of dishwashing without refilling. It has a stainless steel frame which holds a plexiglass tube, inside of which is a polyethylene bag filled with "Dri-it," the *DuBois* rinse additive.

Let CREAM OF RICE help solve your modified diet problems

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EXTRA NOURISHMENT

Cream of Rice is rich in iron plus Vitamins B_1, B_2, and Niacin.

It gives quick energy fast, too. Actually within a few minutes after eating. Cream of Rice is easy to digest. Many leading pediatricians advise it.

And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, intestinal distress and old-age food difficulties.

2
EASY TO FIX

Now Cream of Rice cooks in just 30 seconds. That's 10 times faster! What could be easier . . . quicker . . . less work! It's a meal in half a minute. A delicious, nourishing, easy-to-digest cereal young and old enjoy.

3
CREAMY RICE TASTE

Cream of Rice has a delicate flavor. Different, delicious. This is a creamy rice treat that really tastes good.

Guaranteed by Good Housekeeping

COMMENDED BY PARENTS' MAGAZINE

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Send your name and address to:
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